

CENSUS, 1st APRIL, PROCLAMATION.
 By His Excellency the Right Honourable HUMBLE, Earl of Dudley, a Member of His Majesty's Most Honourable Privy Council, Grand Cross of the Most Distinguished Order of Saint Michael and Saint George, Knight Grand Cross of the Royal Victorian Order, General and Commander-in-Chief in and over the Commonwealth of Australia.
 WHEREAS by the Census and Statistics Act 1905 enacted that the Census shall be taken on the first day of April in every year, and that the Census Day shall be a day appointed for that purpose by proclamation:—
 Now, therefore, I, William Macleay, Governor-General and Administrator of the Government of the Commonwealth of Australia, do hereby proclaim that the Census Day for the year 1905 shall be the first day of April in that year.



INFORMING A NATION

THE EVOLUTION OF THE AUSTRALIAN BUREAU OF STATISTICS

1905-2005

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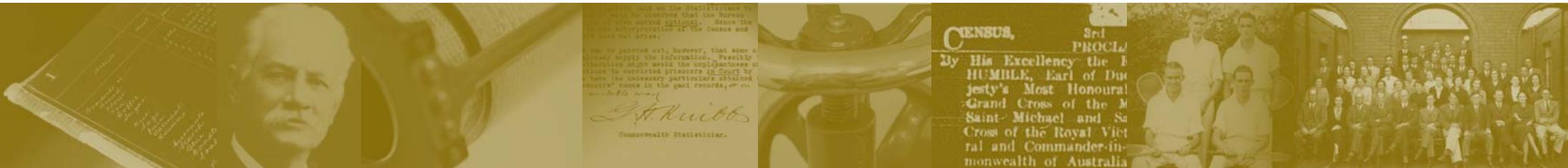
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INFORMING A NATION

THE EVOLUTION OF THE AUSTRALIAN BUREAU OF STATISTICS 1905-2005

1905-2005

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<i>Image by seventyeight.com.au</i> | 5 | Detail of a Mullen burst tester
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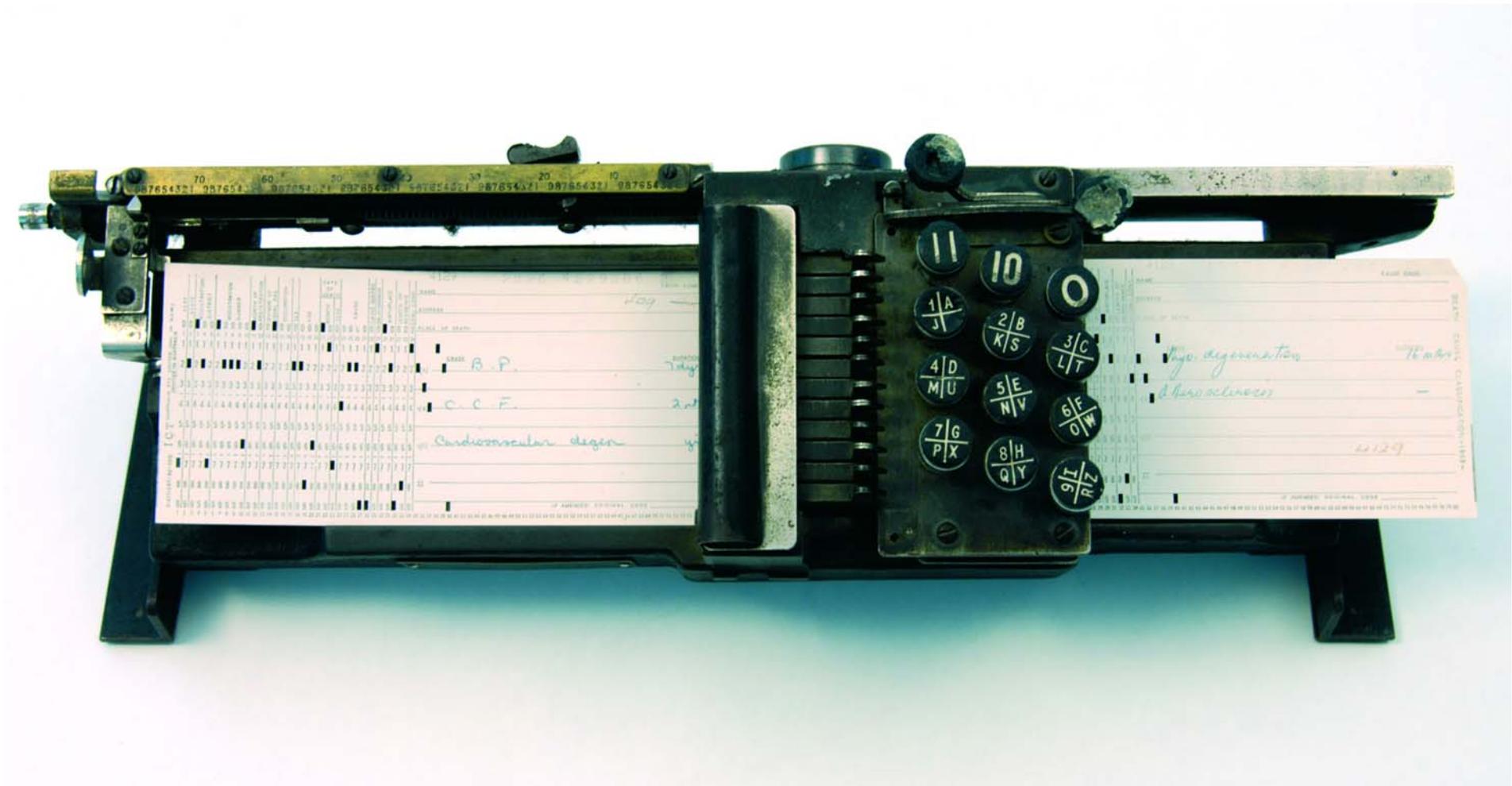
Message to past and present staff

Researching and writing the history of any organisation is a bit like being asked to produce a picture from a jigsaw puzzle. We started with a few pieces of the puzzle and some clues to where we might find others. This gave us enough information to make out the basic design of the picture, but many pieces are still missing. This publication is merely the closest we can come to a history with the information and resources we have now.

So this publication of ABS history is not an end to the history collection but a beginning. If you find something in the publication which you believe is wrong or incomplete, please let us know and your information will be added to the ABS History Database. As events unfold affecting the organisation, we will continue to capture them. In this way we can add to the permanent knowledge of the Bureau about itself, and future generations of ABS staff will be able to gain an understanding of what we and our predecessors did and why.

The Jolimont Building as seen through the arches of the Melbourne Building in Canberra's Civic Centre, in 1929. It was known as the Census office for more than 30 years. The first bureau staff to work there were those developing the 1933 Census.





An 80 column hand punch machine used in the Commonwealth Bureau of Census and Statistics. Punch machines were used in the Bureau from the time of introduction of mechanical tabulation for the 1921 census and 80 column

machines were used from the late 1930s. Their use continued well into the computer era (although by then the cards were not usually manually punched). Punch cards were used to store, sort and collate data records.

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Preface

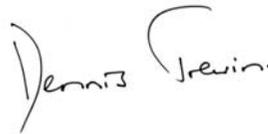
On 8 December 2005 the Australian Bureau of Statistics celebrates 100 years of service to the people of Australia. On that date 100 years ago Parliament gave its assent to the *Census and Statistics Act 1905*. In the following year George Handley Knibbs was appointed Commonwealth Statistician and the Commonwealth Bureau of Census and Statistics was established. This publication charts the progress of the organisation throughout the century.

In this centenary year it is appropriate to look to the past to give context to the present and as a guide for the future. Only when we know where we have come from can we fully comprehend where we are today. And only by understanding the past can we be reasonably confident that the path we choose to the future is the right one.

The Commonwealth Bureau of Census and Statistics was established as one of the pillars of democracy. Today the Australian Bureau of Statistics continues that role and so much more. The Bureau has retained the core values of those early years: relevance, integrity, professionalism, confidentiality and access for all.

While many people involved in the development of this history are listed in the acknowledgements section of this publication, I would like to take this opportunity to personally thank them all for their efforts. Their contributions are gratefully appreciated. I would especially like to acknowledge the contribution of Beth Wright, Joanne Caddy and Dale Chatwin who are primarily responsible for the content of this publication. I would also like to thank Bill McLennan who reviewed several chapters of the publication.

As much as this publication is about the history of the Australian Bureau of Statistics as an organisation, it is also a history of the people who have contributed to the Bureau, people who were professional and dedicated in their efforts to serve the governments and all other Australian users of statistics over the decades. The professional reputation of the Australian Bureau of Statistics today is the result of the commitment of staff, past and present, to our core values. This publication is dedicated to the past and present staff of the Australian Bureau of Statistics. Thank you.



Dennis Trewin
Australian Statistician
October 2005

In 1959 the Bureau began a statistics cadet scheme which selected young people to train in the specific statistical skills required by the Bureau. This photograph shows the 1960 cadets. Pictured are (centre, seated) Bill McLennan who was to become the Australian Statistician 1995 – 2000 with:

(Seated L to R): Chris Higgins (later Secretary to Treasury), Chirapun Bhanich-Supapol (a Colombo Plan student from Thailand), Elizabeth Reid, Keith Blackburn; and

(Standing L to R): Michael Singleton, David Leaver, Jack Maurer, Alan Brooks, Jim Barratt, Reg Gilbert, and Arch Crittenden.



Above: Staff of the Commonwealth Bureau of Census and Statistics who worked in West Block in 1936. The photograph excludes staff who worked at the Census Office.

Front row (L to R): Dan Moore, Nancy Forbes, Stan Moss, John Stephen, Harold Green, Roland Wilson (Commonwealth Statistician), Dr. Arthur Smithies, John Barry, Herbert Ransom, Joan Darcy, Jos Jones.

Second row (L to R): Rita McGinness, Maureen Carroll, Jean Crawley, Joan Barnes, Ivy Dunstan, Dora Whitelaw, Mavis Anderson, Jess O'Shea, Joyce Sheehan, [possibly Edna Baker?], Gladys Joyce.

Third row (L to R): Eileen Lynch, Marge Curtis, Jean McLean, Stephanie Pritzler, Wilma Chapman, Bessie Wylie, Molly Bates, Winifred Young.

Fourth row (L to R): Jack Dando, Bill Tickner, Eric Peterson, Ted Hicks, Sid Bone, George Cordy, Dick Heyward, Herbert Loftus, Jim Murray, Keith Janson, Frank Sayer, Ray Gilligan, Noel Dunstan, Joe Elliot, Jim Anderson, Joe Laity.

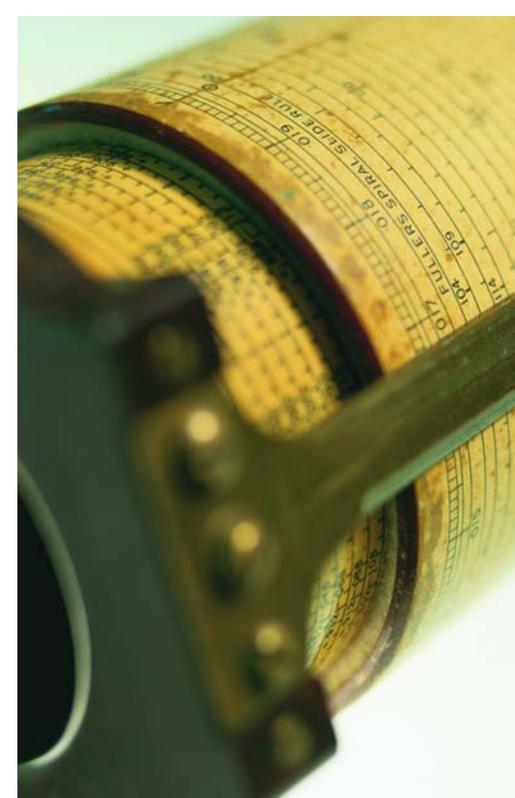
Back row (L to R): Fred Hill, Sid Bayer, Jordan Starkey, Bill McCue, Keith Andrews.

Opposite: Detail of a Fuller's cylindrical slide rule calculator in common use in the Bureau prior to the introduction of electronic calculators.

More than just numbers

AN INTRODUCTION

chapter one



CHAPTER ONE



The role of the ABS

A national statistical service is an essential element of any democracy. 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 and its governments their 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.'

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 produces information on everything from counts of 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 ABS Mission Statement on the wall of the atrium in ABS House.

The information it generates helps the various stakeholders in our society to evaluate how the issues of concern to them may progress and to make decisions that will shape the future.

The general view is that the Bureau has done its job well. In 2002 the social commentator Hugh Mackay wrote a review of the Bureau.

'... Australia is blessed with one of the world's leading statistical services – not only in conducting an exemplary Census every five years, with results published in record time, but field surveys and statistical projections that hold up a revealing mirror to our society.'

'... In fact, ever since it was established in 1905 as the Commonwealth Bureau of Census and Statistics, it has generated nothing but goodwill and trust.'

'But the main thing about the ABS is that its material is endlessly fascinating to anyone trying to make sense of this society. Its publications offer brilliant illuminations of the state of the nation, and the ABS remains the one indispensable source of information about the kind of society we are becoming ... Know thyself is as good advice for societies as for individuals, and no-one helps us do that better than the ABS.'

Hugh Mackay, *Sydney Morning Herald*, 22 June 2002.

The Bureau has always aimed to produce statistical outputs that can be trusted, because they are of good quality, objective, and collected and compiled using professional methods. The evolution of the Bureau's statistical outputs is discussed in chapters three, four, five and six.

There is a strong sense of purpose in the Bureau's work, shared and understood by the staff, encapsulated in its

mission statement and the supporting principles. This is amplified later in this chapter.

The Bureau has been strong in strategic planning and maintains a well based planning system including a three-year forward work program. This is discussed in chapter two.

The Bureau has had very effective leaders who have been supported by staff of high quality. Investing in people has been an important strategy for the Bureau. This investment is not just in terms of learning and development activities, but also in a satisfying working environment. These points are developed in chapters two and eleven.

The Bureau has maintained world class information technology and methodology units.

'Innovation is essential ... Most of the innovation comes from the smart use of technology or from the smart use of statistical methods ... the strong relationship between technical and methodological staff and the business areas is the driving force behind innovation at the ABS.'

Dennis Trewin (Australian Statistician 2000–present) quoted in *Australian Business and Investment Explorer*, Vol. II, 2003.

The evolution of methodology and technology in the Bureau is described in chapters seven and eight.

Bureau outputs have evolved, as have the media in which they are distributed, in response to the needs of clients and the opportunities provided by new technology. These changes are explored in chapter nine.

The Bureau has also achieved a high level of cooperation from business and household respondents, emphasising the importance of maintaining a high level of trust.

Internationally the Bureau is well regarded. It has contributed extensively to international statistical activities. This reflects not only the capability of people representing the Bureau but the fact that they can speak with authority on statistical issues during debates. The Bureau's international activities are discussed in chapter ten.

Today the Bureau is an organisation of around 3 000 staff as well as 200 interviewers. An additional 1 200 staff were employed for processing the last population census and almost 40 000 were hired to distribute and collect census forms.

The Bureau operates in nine offices across Australia – the central office in Canberra, and one in each of the state and territory capital cities. This is largely due to its history. At the time of Federation in 1901 statistics were collected by each state for its own use. It soon became clear that a national statistical office would be required to develop nationally comparable statistics. The first office of The Commonwealth Bureau of Census and Statistics was established in 1906, but the states maintained their own statistical offices and worked together with the new Bureau to produce national data. Some states found it difficult to resource a statistical office to the level required for an adequate statistical service. In 1924 the Tasmanian statistical office transferred to the Commonwealth, and the unification of the remaining state statistical offices was finally achieved in the late 1950s.

The agreements with most of the states require the Commonwealth Bureau to maintain an office in each of the state capitals. This arrangement has served the Bureau well, by keeping it close to the key clients, particularly state governments, and providing access to a broader labour market when recruiting staff to undertake work requiring specific skills.

We assist and encourage informed decision-making, research and discussion within government and the community, by providing a high quality, objective and responsive national statistical service.

The ABS mission

The Bureau formulated its first mission statement in its first Corporate Plan in 1987. It has been reviewed (most recently in 2005), but has changed little.

'... the future of an organisation such as the ABS depends upon its capacity and willingness to define its mission, set out its objectives and create the conditions in which those objectives can be achieved. The aim of the first ABS corporate plan is to set us along that road.'

Ian Castles, 'An introduction by the Australian Statistician Ian Castles' in *ABS Corporate Plan 1987*.

The Bureau has found that the sentiments first enunciated in the mission statement in 1987 remain just as relevant today. This reflects the organisation's stability of purpose. Fundamentally the mission statement is an explanation of why the Bureau continues to exist.

What does the mission statement mean?

'... assist and encourage informed decision-making, research and discussion ...' is a description of the function the Bureau's statistics should perform. The work of the Bureau is about producing statistics that are needed, in an acceptable time frame, making sure that decision makers are aware of what statistics exist and are able to access those statistics in a form that suits them, and presenting statistics in a way that enables them to be used effectively. The Bureau also needs to provide additional information to help clients to understand and interpret the statistics.

'... within government and the community ...'

describes the key clients of the Bureau. The community encompasses all its entities, from large corporations to labour and non-profit organisations, teachers and students, and Australians in all walks of life. The Bureau also needs to provide statistics for all levels of government.

'... high quality, objective and responsive ...' is a description of the kind of service the Bureau aims to provide. To fulfil the Bureau's mission, its data need to be accurate and reliable, and must be complemented by services to explain the information and its quality. An independent and objective national statistical service is of critical importance to a democracy. Some have argued that an indicator of how well a democracy is working is the degree of independence an official statistical agency is accorded, and by its performance in producing relevant and timely statistics.

The way the Bureau operates now, and the way it has operated through successive governments in the past, allows those in government, those in parliaments, and those wishing to understand the policies and claims of governments, equal access to the full range of economic, social and environmental measures produced by the Bureau. Clients can also trust that what the Bureau releases will reflect facts, not opinion. The Bureau also values relevance and timeliness.

ABS principles

The ABS principles define the organisation's beliefs and core values; they identify why it exists and what it stands for. They expand on the standards set out in the ABS mission statement.

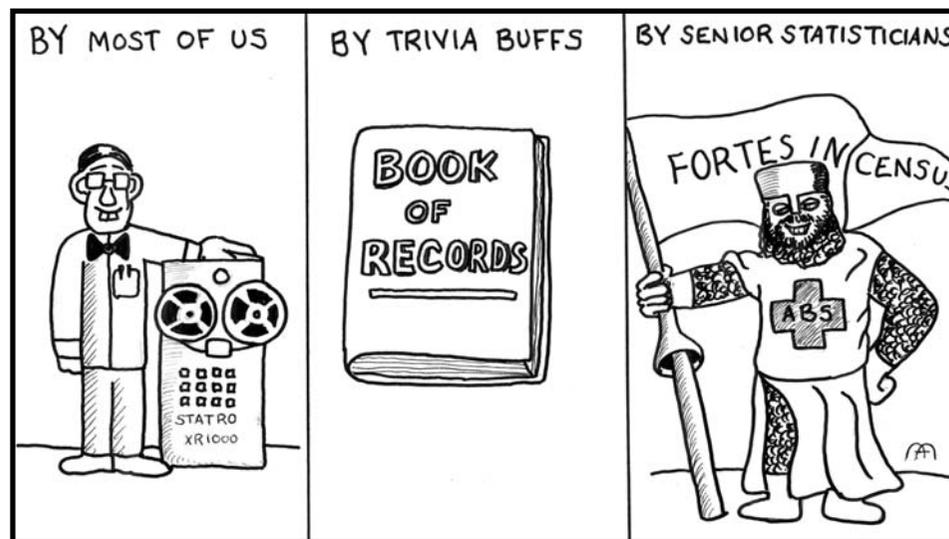
RELEVANCE

'Our efforts are directed to the best interest of the Australian community. To aid this, the ABS should ensure that data needed for policy and research purposes is available when required. Good statistical planning, which requires a keen understanding of the current and future needs of users, is essential.'

'We also recognise that, in order to be relevant to informed decision-making, debate, and discussions, our statistics must be timely and relatable to other data. To support this, they will be placed in an appropriate statistical framework. We should also provide analyses and explanations to help the interpretation of our statistics.'

ABS Corporate Plan 2000.

The data the Bureau produces have to be appropriate to clients' needs; there is no point in producing data on something that is no longer relevant. Data must also allow the Bureau's clients to make sense of the society in which they live. Governments and public planners have to be able to use the information to assess the past and plan for the future; the media, researchers and public commentators must be able to use the information to measure the efficiency and progress of government policies and programs; and the data must also be useful to citizens, to allow them to make their assessments of the aspects of the society of concern to them. The Bureau has to be up to date with major shifts in social, economic and environmental issues and perspectives. For example



'Perceptions of the ABS' by Michael Ashley.

the Bureau has made some significant changes to its collections in recent years to reflect changing priorities, such as the growing importance of service industries in the Australian economy, increased focus on the environment, changing labour force arrangements and increased interest in matters dealing with social cohesion.

'In a policy sense, statistics are not relevant on their own. To be relevant, they must be given a political and policy context, and shaped for a specific decision and decision maker. This of course is not the Statistician's job, though the Statistician can do a lot to help the process. Good statistical planning is crucial so that the right data are available at the right moment for decision making, or to inform community debate – official statistics need to be timely, with revisions kept to a minimum. Consistency across series is important in reducing uncertainty.'

The ABS must analyse and interpret its data so that users are fully aware of what the data are saying.'

Bill McLennan, 'The Product of the Australian Bureau of Statistics' for the Knibbs Lecture to the Canberra Branch of the Statistical Society of Australia, November 1995.

Data should not just be collated and released. As the provider of official statistics, the Bureau has a duty to explain and clarify the information released, to do all it can to ensure that the information is understood and not accidentally misused. This may be as simple as ensuring that explanatory information is released with data, but can also include developing frameworks to place the data in context, developing manuals to explain concepts, sources and methods, or releasing analytical information based on the Bureau's data.



INTEGRITY

'Our data, analysis, and interpretations will always be objective (e.g. apolitical), and we always publish our statistics. We decide what to publish, and then do so in ways which explain and inform, without advocating a particular position.'

'Our statistical system is open. We set and publicise, in advance, the dates for the release of all our statistics.'

'Pre-embargo access to statistics is strictly controlled under publicly known arrangements. The methodologies and approaches we follow are based on sound statistical principles and practices, disseminated widely, and open to scrutiny.'

ABS Corporate Plan 2000.

For statistics to be useful to a society and to a government, they must be free from interference.

*'There are only two people I trust
– God and the Commonwealth Statistician.'*

Billy Hughes (Prime Minister 1915–1923).

While until 1975 the Bureau was a division of various government departments, particularly the Treasury, the Bureau has always maintained its independence. This was primarily due to the determination of the Commonwealth Statisticians from the outset not to be subject to the whims of government or of other agencies, and also because those in government and in those departments recognised the importance of an independent statistical agency. The fact that the functions and powers of the head of the Bureau were derived not from the *Public Service Act 1922* (Cwlth), but from the *Census and Statistics Act 1905* (Cwlth), also helped.

Keith Archer receiving his OBE at Government House from His Excellency Lord Casey, Governor-General of Australia, 1965.

'I never had any interference; the only control on the office was a financial one. The Treasury had the financial control and it controlled what resources we had. In fact when I first came here we were a branch of the Department of the Interior for something under a year, I think, then it was transferred to the Treasury. But the Treasury never attempted to interfere in any way.'

Sir Roland Wilson (Commonwealth Statistician 1936–1940, 1946–1948), interviewed in 1984.

Of course the integrity of the work of the Bureau is influenced by the Statistician of the day. Today the independence of the Bureau is greatly assisted by the independence of the Australian Statistician as established by the *Australian Bureau of Statistics Act 1975* (Cwlth). The Statistician has the authorities and responsibilities of a head of department. The occupant is appointed for seven years and can only be removed on the grounds of misbehaviour or incapacity if agreed by both Houses of Parliament during the same session of Parliament. The Australian Statistician determines the statistical priorities of the Bureau, assisted by the recommendations of an independent body, the Australian Statistics Advisory Council (ASAC).

'The independent status of the Australian Statistician's job is specified in law, and I am pleased to say the position and its functions have always received strong bipartisan political support.'

Bill McLennan, 'Australian official statistics – aims, issues and prospects', Address to the National Press Club, July 1995.

The Bureau must also be perceived as independent. It takes its reputation very seriously and reacts quickly to any attack on its integrity. Its reputation is such that, while President of the Senate, Senator Margaret Reid observed:

'... There's never been any question of the Bureau being other than what it is – a significant organisation to collect information, which the nation needs and must have, and doing it in a way that everybody can totally accept.'

Senator the Hon. Margaret Reid (President of the Senate of the Commonwealth of Australia 1996–2002), 'Speech to launch the Year Book', January 2001.

While the legislative changes in 1975 established the legislative independence of the Bureau, in reality it has always enjoyed a high level of independence from any political interference, and its past and present staff have placed great value on working in the independent environment of the Bureau.

ACCESS FOR ALL

'Our statistics are for the benefit of all Australians and we ensure that they can be easily accessed and used by the community, business, and governments. We strive for accurate and widespread media coverage of our findings and provide access to statistics through a range of affordable and high quality information products and services.'

'We ensure that equal opportunity of access to statistics is enjoyed by all users. Key publications and electronic products are placed in public libraries free of charge. Pre-embargo access to publications containing new results is rare and only approved where there is a genuine and compelling reason.'

ABS Corporate Plan 2000.

Ensuring ready, even-handed access to statistics for public information is an important role of a national statistics agency. The Bureau takes seriously its obligations to provide a quality service to all in the Australian community, and various strategies are in place to ensure that the general community can access at least some information freely. From the 1970s the Bureau has worked at developing a good relationship with the media, as this is seen as the main way in which the information produced is disseminated to the entire community. Today the ABS web site is also a key source for ensuring that the community can access the Bureau's information, along with the National Information Referral Service (an enquiry service for clients) and the Library Extension Program.



The Library Extension Program

This program is a key example of the principle of access for all. It provides 'ABS shopfronts' to 512 libraries, including public, university and TAFE libraries as well as all state and parliamentary libraries and the National Library. The Library Extension Program was established in 1991. It was recognised in 1993 with an award for excellence by the Australian Institute of Public

Administration. It provides Bureau publications free to libraries, originally in hard copy, but more recently for electronic access. The program also provides member libraries with free training in how to use Bureau information, a quarterly newsletter, as well as promotional materials.

The Australian Institute of Public Administration awarded the Library Extension Program for excellence in 1993.



On 4 December 2003 Australia reached a population of 20 million people. The ABS held a special celebration to recognise the event, inviting school children and the Treasurer, Peter Costello to ABS House in Canberra.

PROFESSIONALISM

'We exercise the highest professional standards in all aspects of ABS activities. ABS staff have been trained in a wide variety of disciplines and we combine our varied professional skills in pursuit of the ABS mission. We actively develop the professionalism of our staff, to ensure that the ABS will have the technical skills and leadership it needs for the future.'

'The integrity of our statistics is built on our professional and ethical standards. We contribute to the development of international standards, and use them to produce conceptual frameworks and standards for Australian statistics. We follow sound methodologies and adopt the highest statistical standards and practices. We are also open about the quality of our statistics, so that users can better understand and interpret them.'

ABS Corporate Plan 2000.

Professionalism is about maintaining a high level of expertise in the Bureau and backing that up with values and ethical standards critical to its role as the official statistical agency. Staff need to be educated in a variety of disciplines and given appropriate, up-to-date training to ensure that they understand and apply best statistical practices.

The quality of the data is fundamental to the functioning of the Bureau. The Bureau's clients need to be confident that the data are of a quality appropriate to the decisions they make. If one collection is under question then the reputation of all collections suffers. The clients' trust in the Bureau's data is built on the Bureau's professional reputation for quality (encompassing accuracy, timeliness and comparability).

'... ABS data have a deserved reputation of being of high integrity, This does not mean that they are always error free, and it does not mean that the statistics should be used in an unquestioned way, but it does mean that the user knows that

they have been collected and processed professionally and that the statistics have not been fudged for expediency.'

Tom Karmel (Managing Director, National Centre for Vocational Education Research), comments in response to Bill McLennan's Knibbs Lecture to the Canberra Branch of the Statistical Society of Australia in November 1995.

The professional reputation of the Bureau is not only about quality itself; it is also about providing information about the quality of the statistics so that users may take it into account when using the data. That reputation also demands that the Bureau should be working to continuously improve the usefulness of the data. Attention to classifications and standards featured in the Bureau quite early, as it was quickly realised that they allow data from different sources to be compared. Classifications help clients to assess changes over time as well as differences in experience and performance between sub-groups of a population. Standard definitions improve the quality of the Bureau's service by ensuring that the same concept is measured and described consistently across relevant sub-groups.

TRUST OF PROVIDERS

'We have a compact with respondents: they are encouraged to provide accurate information, and we ensure that the data provided is strictly protected as required by the Census and Statistics Act 1905.'

'We keep provider load and intrusion to a minimum, consistent with meeting justified statistical requirements. We always discuss the adequacy of privacy arrangements for household collections with the Privacy Commissioner. Also, we explain clearly why the information is being collected and how it will be used.'

'Every ABS officer is required by law to give an undertaking of fidelity and secrecy, and the ABS maintains a highly secure physical and computing environment. We make sure that in publishing data, identifiable information is not released.'

ABS Corporate Plan 2000.

The Census and Statistics Act protects the secrecy of those providing data to the Bureau. Secrecy is a very high priority for the Bureau; it ensures that not only the letter but also the spirit of the legislation is honoured in all practices. Every Bureau officer is required by law to give an undertaking of fidelity and secrecy. Nevertheless, access to confidential data by Bureau officers is on a need to know basis. Secure computing and physical systems are used for collection, processing and storing of confidential

data. The Bureau maintains regular communication with the Privacy Commissioner, and raises any sensitive issues in advance of the conduct of a survey.

'The ABS is probably the only Commonwealth agency whose assurances of confidentiality mean what they say.'

Nigel Waters (Deputy Federal Privacy Commissioner 1989–1997), 1992.

Throughout the history of the ABS and its predecessor, its statisticians have strived to ensure that the organisation deserves and maintains its reputation for protecting the confidentiality of data provided by respondents. Maintaining the trust and confidence of respondents is essential to obtaining their cooperation in statistical surveys, and therefore is essential to the quality of those surveys.

Confidentiality above all

Throughout the history of the Bureau, its statisticians have preserved the confidentiality of the information provided by individuals and businesses. Today, the Census and Statistics Act protects the confidentiality of data reported to the Bureau. However its statisticians through the decades have always ensured that the data reported to them by individual respondents remained confidential.

For example, Sir Roland Wilson (Commonwealth Statistician 1936–1940 and 1946–1948) once told the story of how legislation for a Census of Wealth was hastily drawn up in the early days of World War II. The legislation was badly drafted and mentioned that the Commissioner of Taxation could have access to the data – without making it clear that he could only access the collated information.

Subsequently, during a tax evasion case, the Commissioner of Taxation formed the view that he could win the case by accessing the defendant's individual Census of Wealth data.

'[He] ... came storming into my office one day and demanded this bloke's wealth card and I said he couldn't have it. "Why?"

"Because they are confidential and if it was used in a court case it could wreck our reputation".

The Commissioner of Taxation, not content with this reply, took the matter to Cabinet and convinced it to approve his access to the individual's data. Then he went back to Wilson to collect the information.

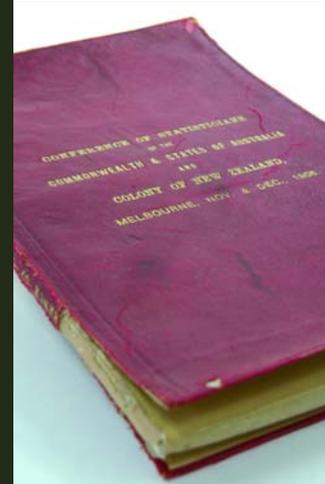
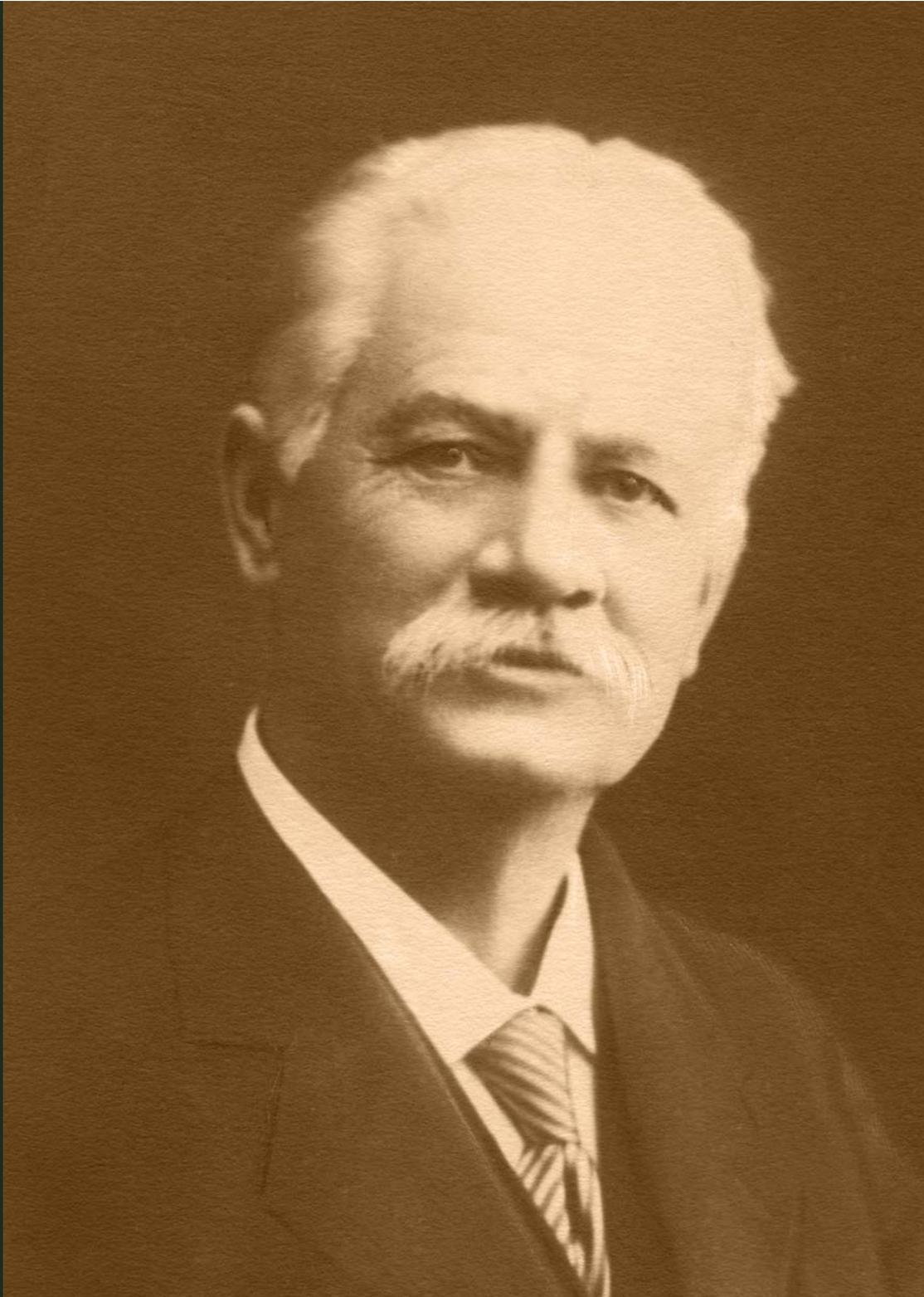
'Oh, he was on the seventh heaven of delight and he came storming along with his two Deputies, waved the Cabinet decision at me and said, "You've got to hand those cards over to me".

"I'm sorry ... I can't." [Said Wilson]

"What do you mean? I've got a Cabinet decision!" [The Commissioner exclaimed].

'[Wilson replied] "You're about a week too late. I piled them onto two trucks last week, sent them down to Sydney and incinerated them".

Sir Roland Wilson, interviewed in 1984.



Left: Sir George Handley Knibbs, the first Commonwealth Statistician, appointed from 1906 to 1921.

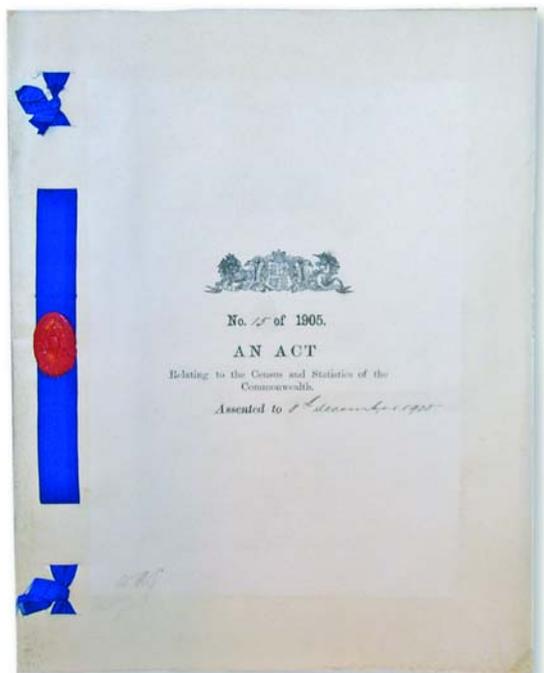
Above: The records of the first conference of Australian and New Zealand Statisticians held after the passing of the *Census and Statistics Act 1905* and the appointment of Sir George Knibbs and his staff. The conference was held in November and December of 1906.

Right: The front facade of ABS House, which opened in 2002.

Building a National Statistics Agency
FROM THE CBCS TO THE ABS

chapter two





The Census and Statistics Act 1905 (Cwlth).

Early days

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. In 1822 the British Colonial Office set up a more formal system, known as the 'Blue Books', in which statistical requirements were prescribed. 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 headed by a 'Statist'. Although efficacy varied considerably between colonies, some produced statistics of a very high standard.

'To a considerable extent the achievement was, for a number of reasons, a legacy of British colonial rule. First, the colonies had been required to produce official statistics on an annual basis; collection was not based on periodic censuses as in the United States. Second, the statistics had to be of a range and quality to satisfy the British authorities, who required them for efficient administration. Third, the statistics had to be brought together by a single officer, the local Colonial Secretary, who took some final responsibility for their accuracy and their presentation; there was therefore a central statistical authority and this contrasted markedly with the British position. Finally the authority was required to present all the relevant statistics of the colony in a single volume – the Blue Book. As an offshoot

of these developments, it was natural for the colonies to begin the production of a consolidated volume of annual statistics for their own use.'

Colin Forster and Cameron Hazlehurst, 'Australian Statisticians and the Development of Official Statistics', in *Year Book Australia 1988*, No. 71.

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.

To prepare for the Federation Census scheduled for 1901 (the first census for the new nation) a Conference of Statisticians was held in March 1900 in Sydney. Timothy Augustine Coghlan, the NSW Statist, reported to Sir William Lyne (NSW premier):

'They consider that uniformity is especially desirable at the present time ... as there is every probability that the figures obtained in the coming Census will ... be the basis of many important arrangements in regard to finance and electoral representation.'

Census of Australasia, 1901 Conference of Statisticians Report, March 1900.

The second reading speech, 23 August 1905

Littleton Groom, member for Darling Downs and Minister of Home Affairs, delivered the second reading of the Census and Statistics Bill. In his speech, he explained the rationale for the type of bureau proposed.

'... There are two courses open. We might have a central statistical bureau, with branches in each of the six states, which could be used for state purposes as required. As an alternative, we could establish a central Commonwealth bureau, and enter into negotiations with the various states with a view to utilizing their departments to the fullest possible extent ... The Bill is framed on that principle. It provides generally for administration ... The desire is to bring into line the statistics of the states for the purpose of comparison, to lay down a uniform method for the collection of statistics in the states for Commonwealth purposes, so that we may have a proper and fair means of comparing the industrial, social, and other conditions of the states ... Hitherto we have had to rely upon the information supplied by the Departments of the states. The Commonwealth Department will enable Parliament, the public, and the press to obtain Australian information on any subject. It will be able to conduct inquiries upon special matters, and will show the effect of our legislation, giving an accurate picture of the conditions of our social and industrial life.'

The speech also dealt with the collection of statistics:

'It proposes that a Commonwealth Statistician shall be appointed by the Governor-General in Council. He will have certain powers, which are defined; but ... he may delegate them under his hand to ... different parts of the Commonwealth. It is proposed to have power ... to appoint a certain number of officers to be placed under the Statistician in the Central Bureau ... if the states desire to continue their existing institutions, and are unwilling to hand them over to the Commonwealth, we may ask them to furnish certain returns, to collect certain information, to make certain inquiries necessary for industrial, mining, or agricultural purposes, and to send the result to the central Department, which will focus all information obtainable respecting Australian affairs ... Provision is also made for the collection of a census, which shall be taken whenever directed by the Governor-General ... It is intended that the Commonwealth census shall be decennial ... the Statistician shall, in addition to the census, collect annually vital, social, and industrial statistics and statistics in relation to imports and exports; inter-state trade; factories, mines, and the productive industries generally; agricultural, horticultural, viticultural, dairying, and pastoral industries; insurance and finance, railways, tramways, shipping and transport, [defence] ... and any other prescribed matters.'

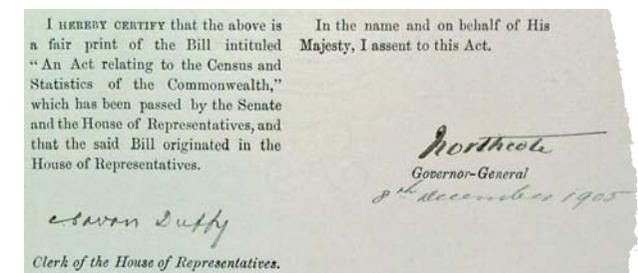
Right: The Census and Statistics Act was given assent on 8 December 1905. It was signed into law by the then Governor-General, the Rt Hon Henry Stafford Northcote, 1st Baron Northcote.

The Census and Statistics Act

Although Conferences of Statisticians were held in 1902 and 1903 to discuss unifying statistics, progress towards unification was very slow. In framing the Constitution, the founding fathers had given the Parliament 'power to make laws for the peace, order and good government of the Commonwealth with respect to: ... (xi) census and statistics', and left intact the right of states to enact statistics legislation. Rather vague on detail, the Constitution leaves the best way to exercise this shared power to the judgement of Parliament. The Government determined that a Commonwealth Bureau of Census and Statistics was required to ensure fair treatment of the 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.

George Handley Knibbs was appointed in 1906 as Australia's first Commonwealth Statistician. Knibbs was given the responsibility to set up the Commonwealth Bureau of Census and Statistics and to unify the states' statistical collections.



The infant national system

'Two methods of procedure were open to the Federal Government. The first was the complete unification of all statistical organisations in Australia. If this had been adopted the Commonwealth would have controlled all statistical work, and would have been represented in each State by a Branch office which would have undertaken the collection and first tabulation of statistical data under the direction of the central bureau. A second method was to preserve the internal independence of the State Bureaux, and to arrange for them to furnish the Federal Bureau with data compiled according to a system agreed upon. The Federal Government chose the second method as being, at present, and in view of all circumstances, more suitable to the actual condition of Australian Statistics, and it was thereupon resolved to hold a conference of Statisticians which should discuss the arrangements to be made in order to satisfy the requirements of the State Governments as well as those of the Federal Government.'

GH Knibbs (Commonwealth Statistician 1906–1921), 'The Development of the Statistical System of Australia', unpublished paper, circa 1909–1911.

The new Bureau was established along the lines of the second option. Under this system the Commonwealth and state Bureaux shared responsibility for the collection of statistics. The role of the state bureaux is described by Knibbs in the first Year Book:

'... The State Statistical Bureaux are now endeavouring, under the authority of the Census and Statistics Act, to collect and arrange all information under a common method and according to uniform categories. The State Bureaux will, therefore, have a double function, viz., they will collect –

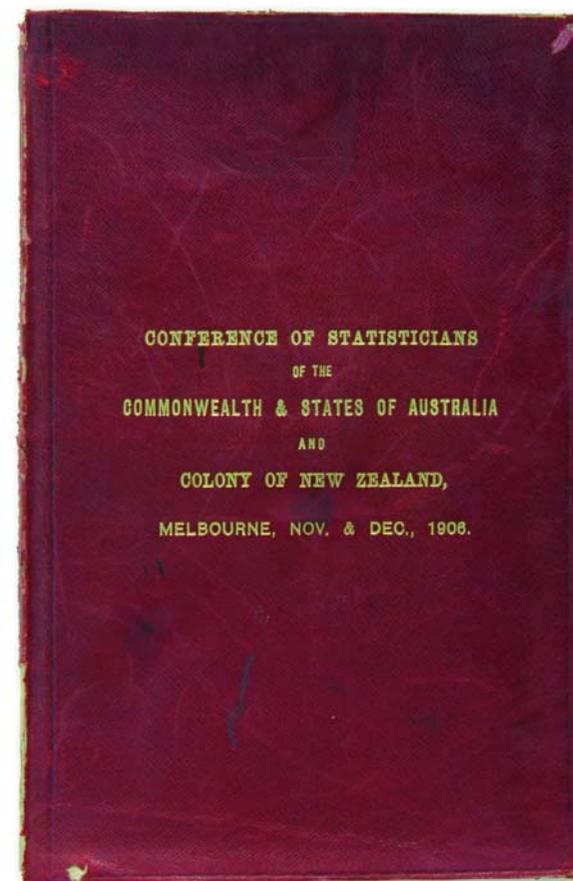
(a) for their immediate requirements as States, and (b) as integral parts of the Commonwealth.'

Commonwealth Bureau of Census and Statistics (CBCS), *Official Year Book of the Commonwealth of Australia 1901–1907*, No.1.

Following a period of extensive touring of the Australian state statistical bureaux, Knibbs presided over his first Conference of Statisticians late in 1906. He submitted and gained approval for a series of prototype statistical forms to be used by each state. The intention was to streamline the statistics obtained from each state to maximise their ability to be compiled to form Australian statistics. Despite this in principle agreement, the states were by no means united in the promptness with which they supplied the agreed data, and the Commonwealth Bureau was unable to produce complete collections until all state input was received. Knibbs was understandably frustrated by this situation. For their part, state Statists complained that Knibbs ignored Conference resolutions and did things his own way.

It soon became clear that the goal of uniform national statistics was not to be easily achieved, and the Commonwealth Bureau found it necessary to undertake original compilations and to take over responsibility for some branches of statistics where it was obvious that the state bureaux either were unable to provide the data in reasonable time, or lacked the will as the data were not critical to state priorities. The first of these was commerce statistics where it was arranged that shipping returns should be sent directly to the Commonwealth Bureau.

The second of these was vital statistics. It was quickly realised that these would be very late and meagre, and possibly inconsistent from one state to the next, if relying on the state bureaux. So it was arranged for state registers of vital statistics to be made available direct to the Commonwealth Bureau.



The report of the 1906 Conference of Statisticians.

Within the first decade, the Commonwealth Bureau was also 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.

Initial attempts at unification

'Notwithstanding this early recognition that the Statistics of Australia should be developed on a uniform plan, the autonomy of each State led to divergences of domestic policy and practice. These divergences tended also to manifest themselves in the statistical technique, as well as in the facts collated. Even where there seemed to be unity of action, or identity in the data to be collected, the unity and identity were often more apparent than real. The comparative studies made by each Statistician revealed with more and more clearness, in proportion as they were thorough, the grave lack of uniformity in the statistical data and methods of the several States, however excellent these may have been considered alone.'

CBCS, *Official Year Book of the Commonwealth of Australia 1901–1907*, No.1.

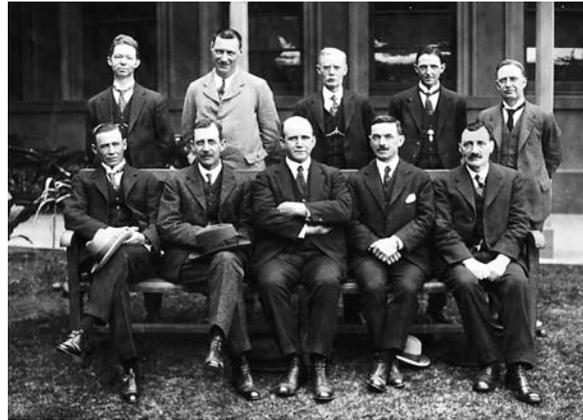
Conferences of state premiers in 1906 and 1918, attempting to end duplication, passed resolutions in favour of combining the state and federal bureaus. However, these were frustrated by the state Statists who were

'... unwilling to surrender the autonomy that they and their predecessors had enjoyed for so long.'

Colin Forster and Cameron Hazlehurst, 'Australian Statisticians and the Development of Official Statistics' in *Year Book Australia 1988*, No.71.

The state Statists would have to be coaxed to relinquish this autonomy.

Charles Henry Wickens became the second Commonwealth Statistician in 1922. He had come from the Western Australian Government Statistician's Office, where he worked on the 1901 population census, and had previously been Commonwealth Director of Census.



Conference of Statisticians, Adelaide, 1924.

Back row (L to R): HJ Exley (Secretary), LF Giblin (Tas.), WL Johnston (SA), HS Semmens (Secretary), S Bennett (WA).

Front row (L to R): J Porter (Qld), H Smith (NSW), CH Wickens (Commonwealth), M Frazer (NZ), AM Laughton (Vic.).

He had experience in working directly with the states towards a common goal.

In May 1923, a Premiers' Conference again passed a resolution in favour of creating one statistical authority for the whole of Australia. Details were to be decided later at a Conference of Statisticians, held in October 1923.

Opinion at this Conference was divided:

'... the Governments of the states of Victoria, Queensland and Tasmania were in favour of the transfer of statistical functions to the Commonwealth, and ... the Governments of the three remaining states desired to retain such functions.'

Conference of Statisticians Minutes, 1923.

Main recommendations from the 1923 Conference of Statisticians

- One single Bureau of Census and Statistics to be set up for the whole of Australia with a local branch in each state.
- The head of each state branch to be a Deputy Statistician, with those of New South Wales and Victoria slightly senior to those of other states; annual conferences to be held between Commonwealth and Deputy Statisticians; and general cooperation between state and Commonwealth to be maintained.
- Specific requirements for Commonwealth and state level published statistics; procedures for state governments to request further statistics and unpublished state statistics to be available locally.
- State governments to continue responsibility for births, deaths and marriages and supervision of friendly societies, but to stop compiling vital statistics and prices information.
- Permanent officers and state bureau equipment to be transferred to the Commonwealth through separate agreements with each state; state branches to initially continue occupation of the premises of the former state Bureaus, and police still to be used as collectors.
- Bureau publications to be available in all states and an extensive list of public figures and institutions entitled to free copies.

These arrangements were to be made on a state by state basis, even if not all states agreed to transfer.

In the period between the Premiers' Conference and the Conference of Statisticians, Tasmanian Premier JB Hayes had initiated the process of transferring the Tasmanian Statistical Bureau to the Commonwealth. A future Commonwealth Statistician, Keith Archer, later suggested that Tasmania was going through a shortage of resources at the time, which provided the political will for the transfer, and that Lyndhurst Falkiner Giblin, the then Tasmanian Statistician,

'... in his wisdom, saw this was a great opportunity to start on the integration.'

Keith Archer (Commonwealth Statistician 1961–1970), interviewed in 1971.

Following the 1923 Conference, Wickens and Giblin negotiated a fairly straightforward path towards transfer. The *Statistical Bureau (Tasmania) Act 1924* contained precise details regarding the statistical responsibilities of the Tasmanian office and the duties to the Tasmanian state government and the Commonwealth government.

Meanwhile, the states in the non-unification bloc maintained their stance, despite changes of government in two states (South Australia and Western Australia). By June 1924 they had all formally declined. Queensland, though originally agreeable, also declined.

Victoria came closest to transferring. The Commonwealth government halted the process in September 1925 due to funding constraints. The Depression, and then the ill-health of Wickens, meant that he did not have the chance to finish the task of unifying Australian statistical offices.

The Tasmanian connection

Following the departure of Wickens, Giblin was appointed acting Commonwealth Statistician and Chief Economic Adviser in 1931. His appointment was on the understanding 'that I should be sufficiently relieved from administrative routine to be able to give the greater part of my time to special investigations required by the Minister' (Forster and Hazlehurst, in *Year Book Australia*, 1988). During his tenure he appointed Roland Wilson as economist with the idea of quietly grooming him to be Commonwealth Statistician in the near future. He also encouraged several other young men to undertake university courses. Among them were KM Archer and JP O'Neill who both went on to be Commonwealth Statisticians.

Edward Tannock McPhee, also originally from Tasmania, was appointed Commonwealth Statistician in 1932, seemingly with the aim of remaining only as long as his health permitted and hopefully long enough to get Wilson 'bedded down' (Keith Archer, interviewed in 1971). Following McPhee's retirement in 1936 Wilson was appointed Commonwealth Statistician and Economic advisor to the Treasury.

In setting up this succession, whether deliberately or just through his ability to choose the right people, Giblin was to have enormous influence on the Bureau's direction long after he left. His emphasis on economics and economic statistics put the Bureau in an influential position as the Australian economy diversified and gathered pace, and demand for economic statistics grew.

McPhee in the words of Wilson

'Yes, he was one of nature's gentlemen. He had been taken over from the state public service, which enjoyed the right to go on to the age of 70, which right he took with him when he joined the Commonwealth Public Service. He was a tall, warm, sincere, God-fearing gentleman in every sense of the term. He could have gone on to 70 but he chose not to. The reason he gave was not his real reason. He got very ill at one time – he lived up the street a bit – and was in bed for quite a few weeks. When he got back to work, he called me in and said, "Roland, I've decided to leave". I said, "Well why do you want to do that, you're only 68, you've got another couple of years left". "Well Roland", he said, "I lay in bed there thinking: now if I die, how would Mrs McPhee get the furniture back to Hobart?", which was a bit of a laugh because she was infinitely more capable than he would ever have been of getting the furniture back to Hobart. The real reason was that he felt he was standing in my light and he was 68 anyhow. But that was the real reason – he thought he was holding me back.'

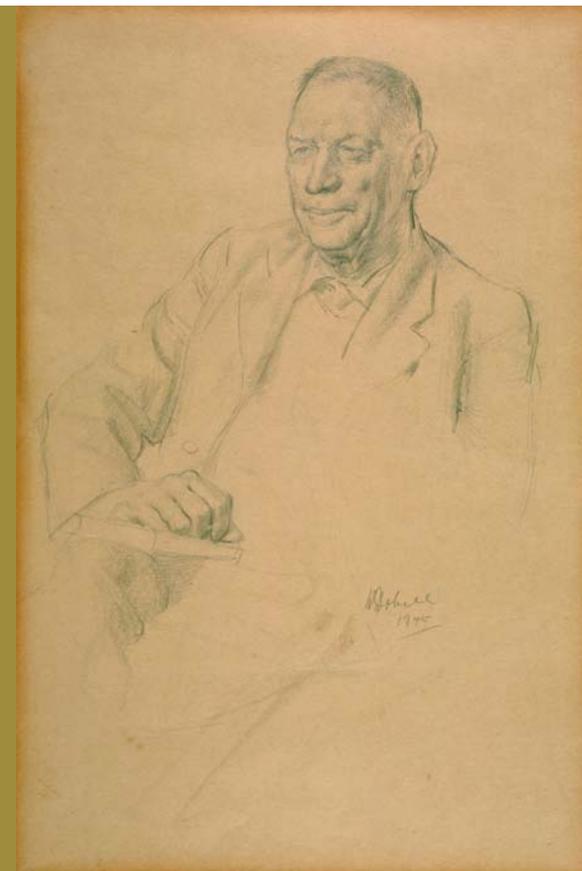
Sir Roland Wilson, interviewed in 1984.

Giblin in the words of Archer

'Well I could talk for hours ... about Giblin ... You see Giblin was a Tasmanian scholar before a Rhodes scholar, and because he was a mathematician he opted to go to Cambridge instead of Oxford. He became one of the wranglers at Cambridge, but he learnt to play rugby, play rugby for Cambridge and for England. During this time he'd become a 'Fabian' and always from that time wore a red tie ... He was lured over to the gold rush in the Klondike where his feet were very badly frostbitten and he always had a slight limp, very slight. He always wore puttees, puttees around his feet instead of socks. He also lumbered in Alaska and then came back to Tasmania, taught in his old school. But this great man – stripped at fourteen [stone] seven [pounds] when he was playing rugby for England – the boys just ran rings around him, he was hopeless as a teacher. So he went to this little holding at Seven Mile Beach where he had an orchard and a poultry farm. He became

interested in politics; he entered Parliament as a Labor member, fought with the Labor Party over the conscription issue. He was then about 41 or 42. He proved his bona fides and he enlisted in Tasmania's own 40th Battalion in the ranks, finished up with a Majority and a DSO. He came back to Tasmania, took his second-rate suit that they offered on demobilisation and was appointed Government Statistician and Registrar-General ... never having formally read economics he was appointed the first Ritchie Professor of Economics in Melbourne University. He was collaborator in The Australian Tariff, he prepared cases for Tasmania's disabilities under Federation, he ultimately served on the Grants Commission and as a member of the Commonwealth Bank Board.'

Keith Archer, interviewed in 1983.



A sketch of LF Giblin by William Dobell.



An envelope sent from the original location (the Rialto Building in Melbourne) of the Commonwealth Bureau of Census and Statistics in 1911. This letter was sent so early in the life of the Commonwealth that it has a Victorian state stamp instead of a Commonwealth stamp. Commonwealth stamps were not issued until 1913.

An expanding role for the Bureau

As Commonwealth Statisticians, Giblin, McPhee and Wilson each focused on economic and statistical issues and chose not to take on the task of unification of the remaining state statistical offices.

'I would have been quite certain, had we attempted to amalgamate them or take any drastic steps like that, that we would have failed utterly and ruined the pitch for the rest of time.'

Sir Roland Wilson, interviewed in 1984.

During Wilson's first six months at the Bureau he constructed the Australian balance of payments. As Commonwealth Statistician, he embarked on an energetic development program, later interrupted by the war, and introduced research officers to inject statistical and economic expertise into Bureau operations.

Early in 1941 Wilson was coopted into other war-related duties, and he appointed an economist and statistician, Stanley Carver, the NSW Statistician, as acting Commonwealth Statistician. Though Wilson was to return for short periods several times after the war, this effectively marked the beginning of the end of the Wilson period.

The immediate post-war period was characterised by Keynesian-style management of the economy. The pre-war work of Giblin and his protégés in 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.

'Australian economists, about this time, were developing a reputation of being "numbers" men.'

Frank Horner, interviewed in 2000.

Unification

Under the stewardship of Carver, amalgamation of the Commonwealth and state statistical offices was finally achieved. The process of bringing the remaining state bureaus into the Commonwealth Bureau of Census and Statistics (CBCS) was initiated by Prime Minister Chifley in 1949, in discussions with the premiers, and continued under Prime Minister Menzies.

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.



Father of unification

Stanley Carver was widely regarded as being personally responsible for bringing about the assimilation of state statistical bureaus into the Commonwealth Bureau in the 1950s. Two former Commonwealth Statisticians describe his role.

Keith Archer, who succeeded Carver as Commonwealth Statistician in 1961:

'Now the principal architect of this was Carver. There's no doubt about the fact that if he hadn't given his word, the states would not have come.'

Keith Archer, interviewed in 1971.

Roland Wilson, Treasury Secretary at the time of integration, and former Commonwealth Statistician:

'It was mainly due to his efforts ... and he played a very skilful game ... I was able to help him a bit by producing a bit of money ... Between the two of us we eventually got them in, but most of the job, 90 per cent of the job, was Stan Carver's.'

Sir Roland Wilson, interviewed in 1984.

Though the need to amalgamate the various statistical agencies across Australia's states was widely recognised, it was Carver's relationship with the other state Statisticians, and their trust in him, that finally allowed this amalgamation to take place.

The *Statistics (Arrangements with States) Act 1956* (Cwlth) was given assent on 12 May 1956. During the second reading speech, Sir Arthur Fadden (Treasurer) referred to discussions already taking place with Western Australia, South Australia and New South Wales. Subsequently, agreements authorised under the Act were made with all the states.

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. However in practice the assimilation of the state offices into the Commonwealth Bureau subsequently led to major changes to state statistics.

Relationship with Treasury

In 1951, Wilson moved to Treasury and from then on the relationship between the Bureau, Treasury and the Commonwealth Government began to change. Wilson took his economic acumen and a number of economists with him and proceeded to build up the economic policy skills within Treasury. The role of the Bureau changed, from providing economic advice to Treasury to providing statistics to Treasury's economic advisers.

While he remained in Treasury, Wilson supported the Bureau's economic expertise. However the relationship had permanently altered and, under successive Treasury heads, Treasury's economic capacity grew and the Bureau's role solidified as provider of statistics.

Foundations for the future

In 1959 'the growing need for professional statisticians led to the introduction of a Statistical Cadetship Scheme' (John Miller, interviewed in 2000). This initiative involved the selection of around twelve outstanding students who were brought to Canberra to undertake Honours Degrees, with majors in statistics, mathematics and economics. This scheme and its later companion the Graduate Cadetship Scheme, were to produce many leaders, both in the Bureau and more broadly in the Australian Public Service.

'... set up the Cadet scheme in the Bureau and we lived through two or three traumatic years in developing it, but then it really flourished. There are now three permanent heads that came out of that Cadet scheme. The Bureau can't keep them all, but we got them. The Keatings and the Cods and the Thornes, you name it. They were all from the ANU, because it was a condition they had to do it in the ANU until Mike Codd, who was one of the best of them, couldn't for family reasons come to Canberra and we let him do it in Adelaide. Then we found that there was merit in letting them do it in their own universities because their matriculation standards were geared to the university.'

Keith Archer interviewed in 1983.

After the war

After the Second World War there was a major lift in the pace of change, and the demand for information increased dramatically. Chifley referred to this in the late 1940s in a letter to state premiers:

'You will recall that during the recent Premiers' Conference, I stressed the need for an expansion in the Australian statistical organisation to meet present and future requirements. It was generally agreed that this need should be met and that I should inform you of the more important branches of statistics which the Commonwealth considers ought to be developed at once, and for which arrangements should be made to provide the necessary staff.'

Ben Chifley, 'Improved Statistics', draft letter to Premiers from the Prime Minister, circa 1946–48.

An internal Bureau document from the mid 1950s states:

'The scope of activities of the Bureau has constantly been widened, particularly to meet statistical needs during the 1939–45 war and the greatly expanded peacetime requirements. In subsequent years, this has, of course, necessitated many changes and developments in organisational structure of the Bureau.'

CBCS, 'Statistical Organisation and Co-ordination of Departmental Statistics in Australia', unpublished paper, September 1956.

Keith Archer's kindergarten

The CBCS established two cadet schemes: the statistical cadet scheme began recruiting in 1959, and the Graduate Cadetship Scheme began in the mid 1960s. Keith Archer is regarded as the father of these schemes.

Both schemes aimed at attracting highly qualified people to complete their studies, at Bureau expense, prior to taking up appointment with the Bureau.

From the beginning it was recognised that there was a need within the Bureau for staff trained and skilled in statistics. Knibbs and Wilson both held this view, and expressed it on record.

This presented a dilemma, as the public service had a policy of recruiting only School Certificate graduates (16 year olds) and returned soldiers. Wilson is said to have invented research officers in the 1930s. He faced much opposition, but was eventually successful in getting the idea accepted by the Public Service Board.

Without doubt the success of the cadet schemes in the Bureau was partly due to the earlier lobbying by Roland Wilson to allow university graduates into the public service.

First hand accounts of the scheme speak of the valuable role it played in giving matriculants greater choice in their university careers. By all accounts the scheme experienced some teething problems, but by the second year, participants were well looked after and their studies well supervised.

'Well, in those days, basically a salary at age of entry for matriculant clerks. So it was base grade clerk at age 17/18 – the age we were starting. University fees were paid. We were full time students doing a university year, expected to work in the Bureau during vacation, although the sort of work planned for us was meant to be educational as much as useful.'

David Leaver, interviewed in 1999.

In keeping with its family minded philosophy, the Bureau seems to have tried very hard to give cadets the chance to undertake their vacation work at the office nearest their home.

Throughout the 1960s and 1970s these schemes ensured a flow of skilled graduates into the Bureau, and often from there into the wider Australian Public

Service. Some of these people have gone on to hold very senior positions within the public sector and business in Australia and abroad. Examples within the Bureau are Bill McLennan, Dennis Trewin, Rob Edwards and Susan Linacre. Examples from the broader public service and beyond are Chris Higgins, Mike Keating, Mike Codd, Elizabeth Reid, Andrew Podger, Vince Fitzgerald and John Hewson.

'We in the Bureau are the beneficiaries of Keith's vision, because many of our most talented statisticians and senior managers are people who came to the Bureau as a direct outcome of Keith Archer's initiative. But the Australian Public Service, and therefore the Australian community as a whole, have also greatly benefited. Indeed, the commanding heights of the public service today are held by graduates from Keith Archer's kindergarten.'

Ian Castles (Australian Statistician 1986–1994), 'Address at the launch of the Colonial Microfiche Project, 12 October 1989', unpublished speech.



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 statistical work. This allowed statistically valid sample surveys to be undertaken by the Bureau at a lower cost than complete enumerations.

'In the early to mid 1950s, even monthly and quarterly statistics were collected on a full census basis. Some attention was given to the possibilities of sampling, but serious consideration awaited the arrival of Ken Foreman who provided leadership in mathematical statistics and sampling throughout his career.'

John Miller (Acting Commonwealth/Australian Statistician 1974–1975), interviewed in 2000.

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.

While this freed resources and allowed the Bureau to establish many new collections, it did not necessarily

mean an improvement in the service provided to state governments. A consequence of increased surveys was that there was an increase in the range of statistics available to state governments, but small area data became more difficult to obtain.

Under Keith Archer (Commonwealth Statistician 1961–1970), and following much research, the Bureau's first computer was installed in 1964. 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.

The 1960s

This decade was an era of great change. Although legally accomplished by the end of the previous decade, the task of assimilating the various state offices and the Commonwealth office into one organisation took many years. In practice it was probably not completed until the late 1970s when Roy Cameron, Australian Statistician from 1977 to 1985, made special efforts to bring closure to this issue.

The decade saw a major push within the Bureau to integrate its economic statistics collections, first the censuses and later the sample surveys. It had been increasingly apparent that there was a need to provide for users a range of statistics that were comparable, so that

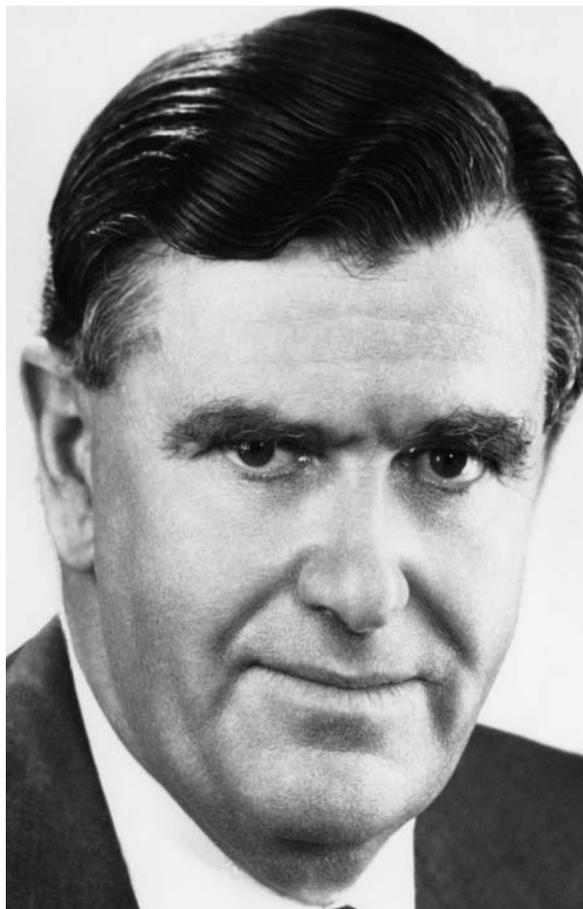
'... you could relate employment to production and wages, and ... you could ... relate overseas investment to these other categories of macroeconomic statistics, which is partly a matter of standardising the units in which they were collected and standardising the concepts.'

Frank Horner, interviewed in 2000.

The twin aims of the integration of economic statistics were to provide comprehensive, reliable, high quality industry statistics and data for use in compiling the national accounts. The model for the project was the United Nations System of National Accounts. Achievement of that goal took a lot of the energy of the Bureau for years. As with many enormous and innovative undertakings, the initial results were disappointing. The first integrated economic censuses, for the financial year 1968–69, took far longer to process than originally envisaged. However in time the value of the integration of economic statistics came to be fully recognised.

The Bureau's first computer arrived in 1964.

The introduction of household surveys was another major initiative, with the initial aim of providing comprehensive estimates of the Australian work force at quarterly intervals between population censuses. The survey estimates also supplemented the existing statistical series of employment (derived from employer surveys) and unemployment (derived from administrative data about recipients of unemployment benefits). Subsequently this became the basis for producing the official monthly labour force series and a much more extensive range of social statistics.



In 1973 Professor Leslie Finlay Crisp was appointed by the Prime Minister to advise on 'general principles and administrative arrangements which would enable the Government to integrate the various departmental data systems servicing related areas of its social and economic policies'.

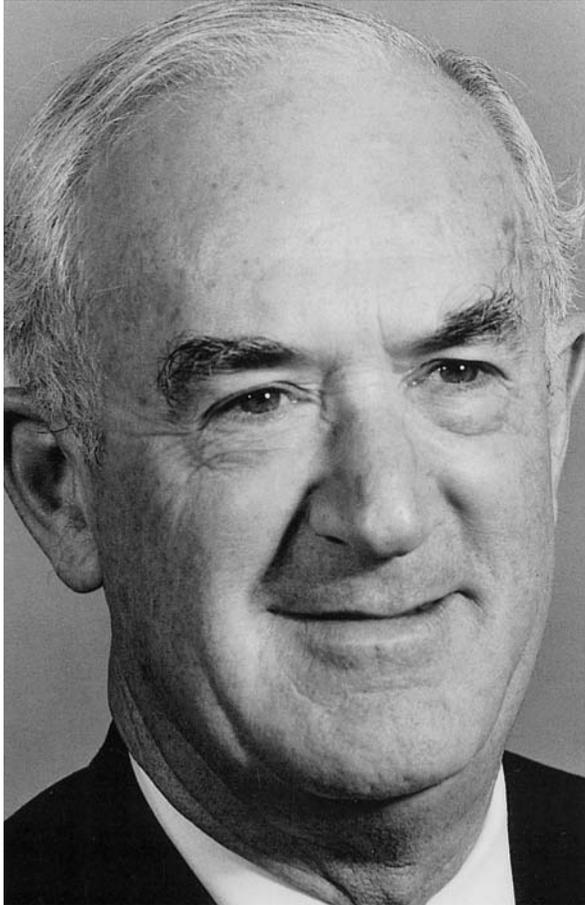
A new beginning

In 1973, the Whitlam Labor Government established the Committee on Integration of Data Systems, known as the Crisp Committee after its chairman, LF Crisp. The Government had been concerned about recent discrepancies in statistics from various Commonwealth departments and the lack of statistical data on key areas of the economy, and believed that this could interfere with its reform agenda. As a result, the Committee 'undertook wide ranging investigations of Australia's statistical system'. (John Miller, interviewed in 2000.)

'The problems [the Industries Assistance Commission] were having was that they'd try to get some statistics out that would show something about the costs of protection and what it meant in terms of employment and so on, and then they'd find the Department of Industry and Commerce putting forward the views of the manufacturers who would have a different set of statistics on a different basis, and so on. So there would be interminable arguments about the statistics, and apart from that you had duplicated approaches to informants for information ...

'The arguments seemed to be compelling to get better integrated statistics ... whether they were collected in departments or in the Bureau they'd be on the same basis, so that you wouldn't be arguing that you were comparing chalk with cheese. In other words if you did a survey in Industry and Commerce of the manufacture of motor vehicle engines you would be talking about the same motor vehicle engine manufacturers as you were talking about in the Bureau.'

Austin Mumme interviewed in 2000.



The first chair of the Australian Statistics Advisory Council (ASAC), Sir John Grant Phillips.

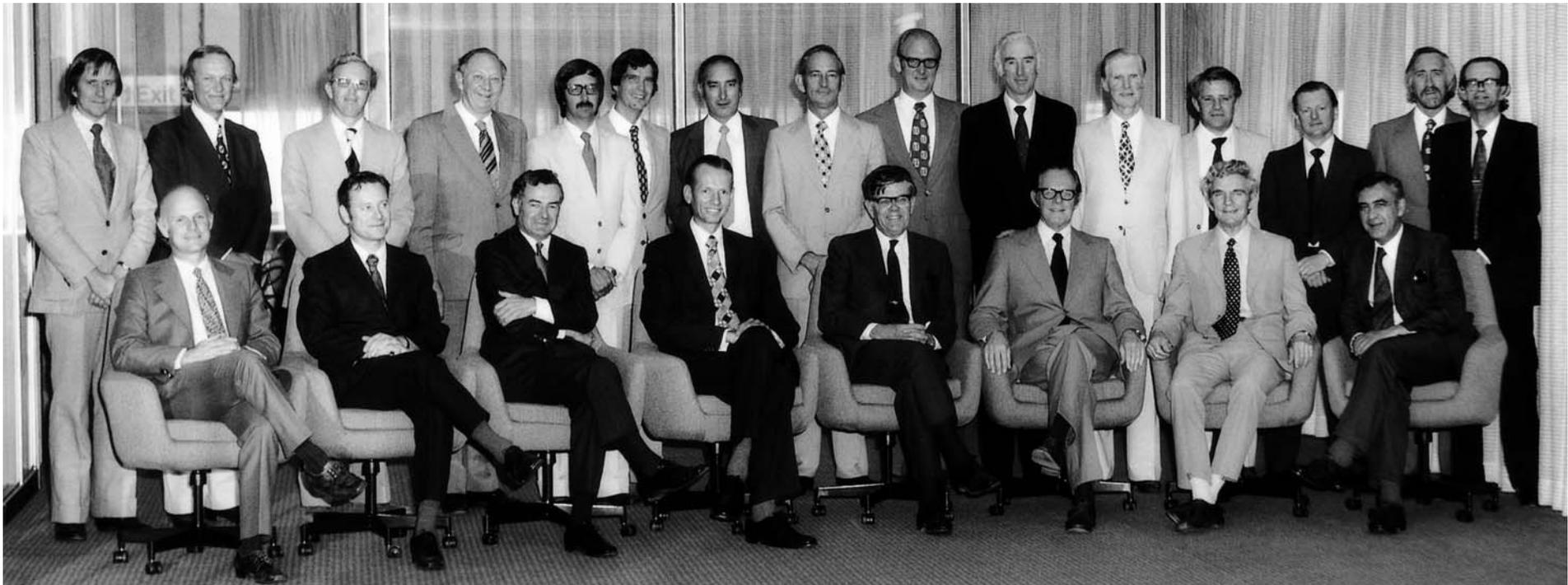
Within the Treasury portfolio, the Bureau was reliant on Treasury for funding, even though the power to collect statistics was conferred on the Bureau by the Census and Statistics Act. The Commonwealth Statistician consequently had freedom to initiate new statistical collections, but operated within the practical constraint that funding would be more assured if Treasury supported these collections.

The Crisp 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. The Australian Statistician was to be a statutory appointee vested with the powers of a head of department under the Public Service Act. This led to the development of the *Australian Bureau of Statistics Act 1975* (Cwlth) under the guidance of Jack O'Neill, the Commonwealth Statistician of the time.

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. It provides statistical services for those governments on a number of levels:

- by collecting, compiling, analysing and disseminating statistics and related information
- by ensuring coordination of the operations of other official bodies in the collection, compilation and dissemination of statistics and related information – with particular attention to avoiding duplication, attaining compatible and integrated statistics, and compliance with standards
- by providing advice and assistance to official bodies in relation to statistics
- by providing for liaison between Australia and other countries and international organisations in relation to statistical matters.

The Australian Bureau of Statistics Act also established 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 that should be adopted in relation to major aspects of the provision of those statistical services. The council consists of a part-time Chairman, the Australian Statistician (ex officio), and between 10 and 22 part-time members, including one nominee of each state premier and the chief ministers of the two territories. Generally, Bureau staff prepare the agenda papers for council meetings.



Greater independence

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.'

Bill McLennan, 'The development of official statistics in Australia, and some possible future challenges', in *ABS, Year Book Australia 2001*, No 83.

In the 1970s, across the public sector, emphasis started to be placed on improving responsiveness to clients and

on cost cutting. The Bureau embraced this two pronged and potentially contradictory approach 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.

Above: The senior management of the ABS at the retirement of John Miller late in 1975.

Back row (L to R): David Leaver, Fred von Reibnitz, Peter Howell, Keith Watson, Mike Giles, Keith McAlister (on exchange from Statistics Canada, replacing Don Anderson who was working in Statistics Canada at this time), Tom Goynich, Fred Bagley, Alan Bagnall, TR (Bob) Jones, Ivan Neville, Bill McLennan, LC (Col) Clements, Max Booth, Aiden Roche.

Front row (L to R): Alex Whittington, Alan Taylor, Frank Stewart, PNS (Noel) Atcherley, Don Youngman, John Miller, Frank Horner, Ken Foreman.

Some important amendments

The establishment of the Australian Bureau of Statistics, and implementation of the legislation, further entrenched the shift away from a decentralised, state-based statistical system. This trend could be said to have started with the Census and Statistics Act in 1905, and was solidified with the merging of the state statistical bureaus into the Commonwealth Bureau. However, just as state offices were in the process of relinquishing authority for statistics to the Commonwealth, federal government departments were beginning to produce their own statistics. The early 1970s saw some examples of Bureau and other departmental statistics being quite contradictory, to the consternation of the government. The Australian Bureau of Statistics Act was a major move towards centralisation of statistics in Australia. As such, it reflected the belief of key players in the Australian community in the efficacy of a centralised system of statistics. At a more practical level, the legislation, by giving the Australian Statistician the powers of a head of department, further raised the status of that position relative to both heads of state offices and heads of other federal government departments, so giving the Australian Statistician greater authority over the Australian statistical system.

In 1979, the Law Reform Commission released a report *Privacy and the Census*. This highlighted the need for a review of the secrecy provisions in the statistics legislation.

1981 saw the passing of substantial amendments to the Census and Statistics Act which, along with other changes, incorporated the recommendations of the Law Reform Commission. This provided the opportunity to thoroughly rework the Act, incorporating the original Act and subsequent amendments into a more coherent framework, using more modern language and

terminology. These amendments legislated those powers, given to the Australian Statistician in the Australian Bureau of Statistics Act, to determine the timing and method of statistics collection. They also obliged the Statistician to compile, analyse, publish and disseminate collected information, and made possible the release of unidentifiable data in unit record files.

A major purpose of the amendments was to make possible the release of a wider range of information. There are many instances where release of these data is appropriate, either because no details for private individuals are thereby exposed, or for businesses the data in question are already within the public domain or have been proven to be non-sensitive. However the legislation as it stood did not allow such releases. It was recognised that releases of such data should be treated as exceptions to the secrecy protections contained in the Act, and governed by very tight and specific safeguards that might vary from one release to another. This level of detail was not considered appropriate within the legislation. The potential to release data was achieved by making provision within the Act for the Minister, in a written determination, to authorise the Australian Statistician to make specific information releases. Determinations of this nature must be tabled in Parliament, and once a determination has been made it remains the final decision of the Australian Statistician whether to release the particular information.

A period of change

In 1981 the Committee for Review of Commonwealth Functions, chaired by the then Treasurer Phillip Lynch, released its report. It recommended that sweeping cuts be made to the entire public sector, which in an operational sense translated into significant budget reductions. Following several years of debate at the Conference of Statisticians, in 1982 the Statistician decided that the Bureau would no longer be a processing agent and handed the coding, data capture and editing of administrative records back to the relevant administering authorities, some of which were state government authorities. This freed Bureau resources to be used elsewhere, for example in the burgeoning household surveys. The administrative authorities, faced with finding alternative means of processing their records, were less than appreciative.

The early to mid 1980s were an important period of change for the Bureau. Under Roy Cameron, 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. Conducted by Touche Ross Services and the Public Service Board, the review identified a number of key areas for improvement. With Cameron's guidance, these recommendations shaped subsequent management planning, contributed to the integration and modernisation of the Bureau and made it more outward looking.

'There is an inherent tension between the need for a single ABS control of projects and resources and the need for a separate control to be exercised in each Division and in each state office.'

Roy Cameron, (Australian Statistician 1977–1985), 'Responsibilities in Central and State Offices', unpublished paper, 1982.

Cameron was largely responsible for setting up a functioning corporate structure within the Bureau. He set up three year forward work plans, and brought discipline to developments projects. Prompted by the findings of the review, he also implemented a form of matrix management.

Under this policy, division heads within the Bureau were responsible to the Australian Statistician for the work of their division, both within central office and throughout the state offices of the Bureau. State office heads were responsible for ensuring that the state components of each division's work were carried out effectively, that the particular needs of their state were represented in Bureau decisions, that links with state clients were adequately supported and, as the major communicators with respondents, that data quality was maintained. The document outlining this strategy paved the way for a strong corporate focus that complemented and enhanced the effectiveness of the forward work program. His reforms are still largely in place today.

The Bureau comes of age

Throughout much of its history, the Bureau was run with each area producing its own statistics, often with little reference to the work of other areas. This was understandable in the light of the level of complexity involved in producing each area of statistics, and particularly developing new statistics and new methodologies. However, as the Bureau grew and became involved in a much wider range of statistics, it became necessary to forge a deeper relationship between these areas, both to avoid duplication of effort and to ensure a unity of purpose across the organisation. Emphasis has therefore been placed on building a corporate mentality at all levels within the Bureau.

With the new corporate identity came a questioning and reassessment of the purpose of the Bureau, and an acknowledgment that it was more than a factory for publications. Out of this process emerged the mission statement, the concept of corporate objectives and a commitment to statistical coordination and analysis. These were conveyed in the Bureau's first corporate plan, developed under the guidance of Bill McLennan while he was Deputy Statistician. Throughout this period the Bureau increasingly focused on efficiency, producing more with the same or fewer resources. In the 1988–89 Annual Report this issue was clearly enunciated with the paper 'A quart out of a pint pot' which spelt out the significant gains in the range and quality of statistical output which had occurred in the Bureau over the previous decade while resources had remained static.

The Bureau's first marketing plan was released in 1989. It followed a government decision that part of the Bureau's budget should be funded through cost recovery. The plan outlined a major rethink in the way the Bureau

regarded its products and its clients. The second marketing plan in 1992 maintained the emphasis on products and the importance of establishing that they were really needed, and out of this emerged the concept of focusing on clients' needs. The third plan in 1996 placed great emphasis on clients. In this way marketing became an important plank in the orientation of the Bureau as an outwardly focused, forward looking agency.

Important in this process was the growth in the Bureau's analytical capacity. Here the influence of Ian Castles (Australian Statistician 1986–1994) was paramount. He strongly believed that the Bureau could add considerable value to its statistics by judicious use of analysis and analytical methods.

'It is increasingly becoming accepted that national statistical agencies themselves have an important role in the analysis of the data they collect. The further that analysts are from the available microdata, the more likely it is that the full potentialities of the data will not be exploited and the greater is the possibility that the data will be misinterpreted.'

Ian Castles, Speech of welcome to the Eleventh Asian and Pacific Conference, February 1987.

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. In 1995 an analysis unit was established, recognising the potential of statistical methods and models for producing official statistics, improving methods or better understanding statistical relationships.

Throughout the 1980s and into the 1990s, Conferences of Statisticians continued to be held, despite the major

governance changes that had occurred to Australian statistics throughout the previous 40 years. At the 1996 Conference, the Australian Statistician

‘... expressed his opinion that the Conference in its present form was not effective and that there must be better ways for the ABS to assess state (and territory) statistical needs and priorities.’

ABS, Policy Secretariat Branch Report, unpublished paper, September 1996.

This was driven in large part by the reducing seniority of the representatives of the states. It was subsequently decided that more thorough use of the Australian Statistics Advisory Council, and greater involvement of the heads of the state offices in identifying state government requirements, would render the Conference of Statisticians unnecessary.

In 1992, as part of its drive to improve efficiency, the Bureau introduced a new approach for data processing and use of state office resources. Under this new system, National Project Centres, with responsibility for all data collection, processing, output (of standard products) and associated support and development activities for specific areas of statistics, were set up in state offices. This realised the advantages of concentrating data collection and processing operations, such as economies of scale and improved data quality, and avoidance of problems with data quality and inconsistency that can arise through decentralised data collection.

Throughout the 1990s there was an increasing emphasis on the use of administrative by-product data. As Director of the United Kingdom National Statistical Office, Bill McLennan had noted the much more extensive use of administrative data in the UK statistical system. When he returned to Australia as Australian Statistician he set about implementing similar procedures in the Bureau, fostering



Ian Castles (Australian Statistician 1986–1994) with Chris Higgins (Secretary to the Treasury 1989–1990 and ABS cadet 1960–1963) at the 11th Conference of Commonwealth Statisticians, 1990.

relationships with other agencies. The relationship with the Australian Taxation Office, in particular, grew strong and a number of cooperative agreements enhanced the usability of taxation data to derive statistics.

Today

A number of important initiatives have been implemented with a view to the future. In 2002 the National Statistical Service was initiated with the specific aim of better coordinating and using those statistical resources residing in other agencies. In 2003 the various forums in which communication was maintained between the state and central offices of the Bureau were formalised into the State Statistical Forum. This new approach involves state and territory ASAC representatives and Bureau Regional Directors meeting to discuss specific statistical matters relating to the states and territories.

Also in 2002, the Bureau embarked on the Business Statistics Innovation Program. This three-year program involves, through the use of innovative technologies and methodologies, a major re-engineering of the way the Bureau conducts its business statistics processes. The program aims to achieve improved provider relations and data quality, increased capacity to respond to emerging statistical needs, provision of a better National Statistical Service, enhanced opportunities for staff and significant budget savings. Similar initiatives have now started in the household survey program.

The last quarter century has been a period of great change. The result is a modern statistical bureau, with solid legislative underpinning, capable of meeting the challenges and needs of the information age.

Right: A Bell Punch Company mechanical calculator from the 1940s or 1950s, one of a number used in the Bureau. Mechanical calculators were usually very large, very heavy and slow to use. So the Bell Punch Company produced this sort of calculator without keys for 6 to 9 to improve the size and weight. It was also thought to improve the speed of the operators. Numbers over 5 could be obtained by hitting two other keys in the same line which added to the required number. For example if an 8 was required, the operator could hit 4 twice.

Far right: Detail of slide rule commonly used in the Bureau prior to the introduction of electronic calculators, to quickly undertake more complex calculations.



From pounds to dollars
ECONOMIC STATISTICS

chapter three



CHAPTER THREE

Pre-Federation

The long process of drawing together the economies of the Australian states into a cohesive national structure had barely begun when the Bureau opened for business. Just as the national economy was the sum of the economies of the states, so the initial economic statistics for the Commonwealth were basically a collation of the economic statistics produced by the various state statistics bureaux.

One of the most renowned colonial statisticians was Timothy Coghlan who, as New South Wales Statistician from 1886 to 1905, pioneered national income accounting. His major contribution was the development of two annual publications, *Wealth and Progress of NSW* and *A Statistical Account of the Seven Colonies of Australasia*.

The statistical practices in many of the states were highly regarded by world standards, but each state had its own way of doing things. Each published statistics in some or all of the following fields: agriculture, forestry, fisheries, mining, manufacturing, international merchandise trade, export price indexes, public finance, private finance (banking and insurance), transport and communications, and labour. Conferences of Statisticians, held periodically from 1861 and attended initially by the statisticians of each state, attempted with varying success to coordinate or integrate these statistics into a form that would be both comparable and compilable across the states.

Following the creation of the Bureau in 1906, the state statistical bureaux continued to collect these statistics. For the Bureau, despite attempts at coordination, one of the early difficulties posed by the federated system of statistics was reconciling these data to produce national statistics.

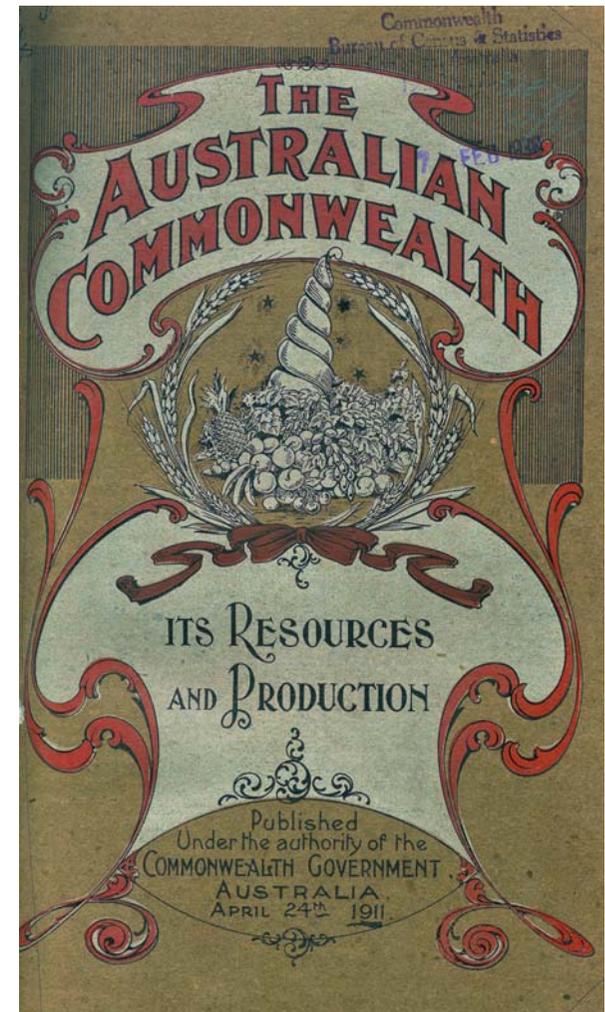
Early developments in economic statistics

Following the example established by Coghlan, and due to his influence throughout the states, the Bureau first released several major annual statistical bulletins in 1907 and 1908, including those for production, finance, transport and communication, trade, customs and excise revenue, shipping and migration. These continued to be published in some form for many years. International merchandise trade data were initially on a calendar year basis, but were changed to a financial year basis in respect of 1914–15. The first Commonwealth Year Book, published in 1908, contained many economic statistics although its scope went well beyond them.

'In the main, relations between the Commonwealth Bureau and the State Bureaux have continued on the basis established by the 1906 Conference, but it was soon found necessary for the Commonwealth Bureau to undertake original compilations, and to develop the scope of the work beyond the mere summarisation and analysis of returns furnished by the State Bureaux.'

'The first branch of statistics taken over for compilation by the Commonwealth Bureau, was that relating to Commerce and Shipping. Returns are received direct from the various Customs Houses and compiled in this Bureau.'

George Handley Knibbs, *The Development of the Statistical System of Australia*, unpublished and undated paper.



Commonwealth Bureau of Census and Statistics, *The Australian Commonwealth: Its Resources and Production*, 1911. First produced for 1908, this analysis of Australian resources and production was one of the earliest publications produced by George Knibbs as Commonwealth Statistician. It was a glossy annual publication with plenty of images and an ornate design. It appears to have been aimed at British audiences to encourage them to migrate to Australia. After Knibbs left the Bureau in 1921 the publisher became the Commonwealth Immigration Office, although the statistical information was still lifted from the official Year Book.

Early efforts to standardise definitions and procedures for compiling economic statistics across the states were made through the Statisticians' Conferences. The Conference of 1906 was the first to be held following the establishment of the Commonwealth Bureau and was attended by the Commonwealth Statistician. It agreed on schedules for the compilation of statistics covering 145 topics, many of which related to economic statistics.

Many of the economic statistics first published under Knibbs continued to be published long into the 20th century and some are still published today. For example, the *Melbourne Wholesale Price Index* was introduced in 1912 and included data from 1861. It was published until 1961. Publication of a *Monthly Summary of Statistics* also started in 1912. Many economic statistics first appeared in this publication. International merchandise trade statistics were first presented on a monthly basis in August 1917. These statistics have been published monthly ever since.

'Foreign Commerce is obviously only a portion of a country's trade and is often not the most important part. It assumes its importance because it is of special significance to the Government as an object of taxation. Foreign trade admits of easy record, since goods must necessarily pass through recognised channels ... In many countries, customs taxation is the mainstay of revenue ...'

HJ Exley, *Australian Official Statistics*, circa 1928.

In the pre-Depression era, balance of payments statistics were not yet on the horizon.

Agriculture

Initially, agriculture was one of the major industry statistics produced annually by the Bureau, requiring a significant proportion of staff resources. In the late 1920s the value added to the economy by agriculture was nearly twice that by manufacturing. Agricultural statistics were discussed regularly at Conferences of Statisticians in an attempt to obtain comparable statistics from each state and so gain a complete Australia-wide picture.

However, by the end of the century many factors had combined to reduce the relative importance of agricultural statistics. Levels of production of other Australian industries had increased, leading to a fall in the relative importance of agriculture. For 1999–2000, gross farm product was just under 3% of gross domestic product. Also, from about the mid 1980s resource constraints and the need to better cover service industries resulted in a move away from censuses towards sample surveys in traditional areas such as agriculture, manufacturing, mining and retail trade. Nonetheless, the ABS continues to conduct a five-yearly census of agriculture and still devotes significant resources to its agricultural statistics program.

The Great Depression hit in 1929–30, and in 1931 following Wickens' sudden and serious illness, Giblin was appointed to the dual role of acting Commonwealth Statistician and Chief Economic Advisor to the Treasurer. At this time Giblin held the Ritchie Chair of Economics at the University of Melbourne, although he had been the Tasmanian Statistician for much of the 1920s. It is said that he accepted the acting Statistician role on the proviso that the Economic Adviser role would be included.

While acting Commonwealth Statistician, Giblin was one of many high-level government and business people involved in emergency meetings following the onset of the Depression. From these meetings evolved the 'Premiers' Plan' for working the nation towards a recovery.

At Giblin's urging, Roland Wilson came to Canberra, and to the Bureau, in 1931. He attended some of the later crisis meetings, but in his words

'Well I, I suppose fortunately, came in at the right time to avoid that. I came here in February 1932 and most of the Depression meetings of economists, political discussions, at state and Commonwealth level, were not a thing of the present but pretty much a thing of the past. All the very controversial matters happened before February 1932. The first connection I can remember on anything of that sort was a committee called the Wallace Bruce Committee, I think in 1932. I never even saw Wallace Bruce ... But the people who did the work on it were Giblin, Sheehan, Melville, Mills – all economists. I used to go along as dogsbody to Giblin, but that was pretty much the end of these gabfests that went on from 1929 to 1931. Premiers' Plan and all that side of it, happened before I got there.'

Sir Roland Wilson interviewed in 1984.

CHAPTER 12
BALANCE OF PAYMENTS, 1928-29

CURRENT MOVEMENTS OF GOODS, SERVICES AND GOLD.

	1928-29	1929-30	1930-31	1931-32
	0000 STG.	0000 STG.	0000 STG.	0000 STG.
I. MERCHANDISE (Exports)				
including silver bullion and coins other	138,646	98,333	70,623	25,467
particulars	116	1,012	1,408	1,222
included in all forms	1,271	1,071	2,130	3,092
of which: process, etc., exported	111	192	494	71
of which: wool exported	1,715	1,195	613	71
II. SERVICES	141,004	100,878	79,155	80,220
A. Government				
Investments overseas	90	181	161	171
Government debt domiciled	52	45	53	58
Government debt overseas	1,352	890	403	470
Government Bodies' debt	209	293	328	330*
Government	388	430	430*	430*
Government	286	701	905	1,074
Government	?	?	?	?
Government	?	?	?	?
Government	2,437	2,346	?	?
Government	2,552	?	?	?
Government		2,346	?	2,542

Giblin, a mathematician by training, had been heavily involved in advising the government regarding the worrying direction the economy was taking. He had also previously constructed a foreign trade and capital flow multiplier. Given his interest in capital flows, it is probable that he recruited Wilson specifically to work on the Australian balance of payments. In 1932 the first attempt at a complete statement of the balance of payments and international investment position of Australia were published in the Commonwealth Year Book, for the years of 1928–29 through to 1931–32. They were compiled by Roland Wilson and were described as ‘tentative estimates’.

‘I did a lot of work in my first six months here on constructing the Australian balance of payments. My first publication of that was in the Commonwealth Year Books. Of course a lot of items I couldn’t get figures for and I set the thing up schematically, putting figures where I could and query marks where there was an absence of information. Then there was a riot from the old editor of the Commonwealth Year Book. The thought of publishing statistics with a query mark instead of figures, he really went to town about it.’

Sir Roland Wilson interviewed in 1984.

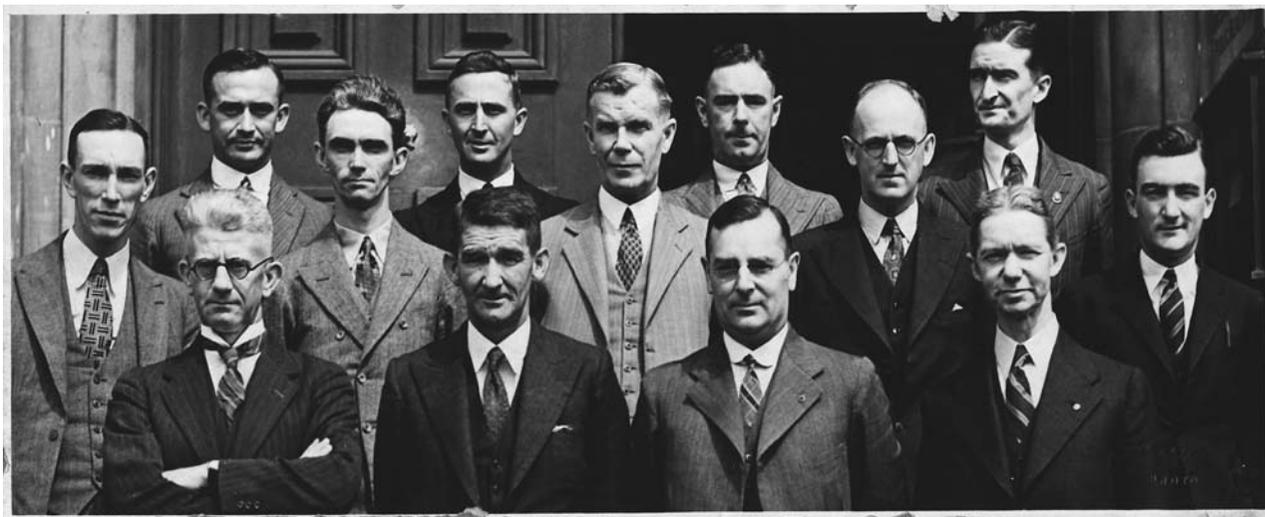
They were presented in pounds sterling and built on work undertaken earlier by Wilson during his studies at the universities of Oxford and Chicago. Updated estimates were released each year until World War II interrupted the work.

Balance of Payments, complete with question marks, from the 1932 Commonwealth Year Book.

When Wilson became Commonwealth Statistician in 1936, he was also appointed Economic Adviser to the Treasurer. In both these roles he was often called upon to give advice at Premiers' Conferences, Loans Councils and the occasional pre-Budget session.

In the 1930s the introduction of Niemeyer statements by all Treasuries was the first step towards more uniform reporting of public financial statements in Australia. These statements were used extensively by the Bureau to compile public finance statistics. In the late 1930s two new public finance publications were developed, relating to taxation and net expenditure on social services.

In 1937 two new monthly export price indexes were introduced, one using fixed weights and the other using variable weights. Wilson took a personal interest in the development of these indexes.



Participants, including Commonwealth Bureau officers, at a 1936 Finance and Local Government Conference.

Front (L to R): M Richardson (Commonwealth Grants Commission), ER Toms (Commonwealth), O Gawler (Vic), HJ Exley (Deputy Comm. Statistician Tas).

Centre (L to R): AF Trueman (Qld), RJ Little (WA), GL Ardill (NSW), P Collins (Vic), EB Thomlinson (Secretary).

Back (L to R): K Davidson (NSW), FD Dunbar (Vic), AG Pickering (SA) and F Sayer (Commonwealth).

Niemeyer reporting

In 1929 James Henry Scullin became Prime Minister just as Australia was entering the Great Depression, with consequences of falling export income, a serious trade deficit, and a tightening domestic economy. The high level of foreign debt and in particular the large amounts of interest payable to London bankers made the situation worse. The government was forced to ask the Commonwealth Bank for extended credit to pay for urgent social services, and implementation of its election platform was all but impossible.

At Scullin's request, a Bank of England delegation, headed by Sir Otto Niemeyer, came to Australia in 1930 and met with Commonwealth and state leaders at a

conference in Melbourne. At the advice of Niemeyer, Scullin and the premiers formed a plan, known as the Melbourne Agreement, to balance the budget by reducing government expenditure and wages rather than resorting to overseas borrowing. Implementation of Niemeyer's recommendations required a unified system of government financial reporting, based on reporting statements known thereafter as 'Niemeyer statements'.

Both prongs of the plan were very unpopular, and Giblin and fellow Australian economist DB Copland subsequently devised a less harsh though still contractionary version that led to the Premiers' Plan.

Getting it right

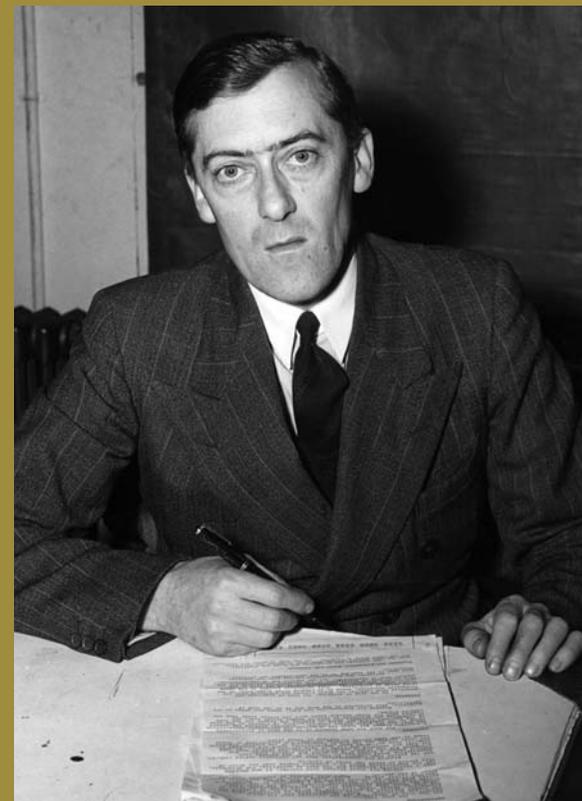
'So I went up trembling ... into his office. [Roland Wilson] had in front of him the Monthly Review of Business Statistics, open at the export price index ... the changing base job, and he said, "Do you know anything about this? What is this Edgeworth Marshall formula ... I want to know why it's used". I said, "Well, I don't really know, I came back here after the War and this was what I was told to do". He said, "I designed this index and I designed it to work on Fisher's Ideal Formula, and why this Edgeworth Marshall formula, and I'm sure there's no such thing, I want to know, and I want to know first thing in the morning".

'What had happened was ... they had been short of staff, he [Horace Browning] had been given a lady to work out these indexes. While she was good and diligent and honest, she wasn't very clever and he had moaned about this to his son. Now his son was a Professor, University of Melbourne. He ... said, "Oh, you can get a result close enough to Fisher's Ideal by using this formula number ... and it has the sanction and authority of Professors Edgeworth and Marshall who say that's a good enough thing to use instead of the Ideal, with very much simpler arithmetic".

'So up I went to ... Roland's office and was let in immediately. I gave him the story. He said, "I wonder how much time that saved. ... I want you to go back, do the sum again that you did, to work it out for this version here, time yourself. Then do it by the Ideal Formula and time yourself". So I did it. What did I save – I've forgotten – it might have been five minutes, it might have been twenty – I don't know. It was neither here nor there, whatever it was. I went back and told him. "Ab, a good big save", said Roland Wilson, "and what would he do with the time he saved?" He didn't know it was a woman. " ... From now on it will be done to Ideal formula. What's more you will go work it back – right back – from the time it was started ... It probably won't matter much, but let's have it right".

'When I came to actually work it back, there were only a few cases where it ... gave a slightly different answer. The answer was only in the decimal point in the three figure index number. It was neither here nor there ... [But] he said, "No, we'll have it right, the records will be correct". Yes, that was a question of integrity.'

HG Houstein interviewed in 2000.



Sir Roland Wilson at his desk in the late 1930s.

In 1938 the first official estimates of national income for Australia were published in *The Australian Balance of Payments, 1928–29 to 1937–38*. These were based on estimates compiled by Colin Clark and JG Crawford in their book *The National Income of Australia*. Crawford went on to become one of Australia's foremost economic policy advisers and was the 1982 Australian of the year. Clark worked in both Britain and Australia serving as an economic advisor to governments in both nations, including a period as the Queensland Government Statistician from 1938 to 1952, and is the only Australian economist quoted by Keynes.

In 1939 the *Wholesale Price Index (basic materials and foodstuffs)* was developed. The series started in 1928 and was published until 1970.

Saved by statistics

'And some of us had also heard about a man called Beveridge, William Beveridge ... [who] had been commissioned by Churchill to look and write a report on social services ... Even at the height of the War there was a ... man working out a policy for social services ... and those terrible five giants that people used to talk about, poverty, want, squalor, disease and unemployment, perhaps had a chance of being depleted and perhaps being depleted by statistical methods in terms of data and policy.'

Col Proud interviewed in 2000.



Victory parade in Melbourne at the end of World War II.

Unemployment fears after the war

'When the War ended I came up from the Air Gunnery School at Sale to Melbourne to march in the Victory Day Parade – Victory Day J or VP as they call it now. At the end of the Parade we were sort of set upon by the population. We were pushed around a little bit. The fear of unemployment was there. I can remember our caps being pushed off by the people with "Now you'll have to go and get a job". But there was unease amongst the local population, even in Melbourne on that day. Employment was going to be an important issue. And even though we were pushed around in an amicable sort of way, there was a little bit of a shove occasionally and you could feel that these were issues that were going to be of great concern to our society.'

Col Proud interviewed in 2000.

Economic planning for full employment

World War II impacted heavily on the introduction of new economic statistics in the Bureau; resources were tight and many of the finest minds were required for more urgent war-related work or were serving in the armed forces.

After World War II, the Commonwealth government became much more actively involved in management of the economy, both to steer it back to peacetime operation and to avoid the fearful possibility of a return to depression.

In 1945, the government released the *White Paper on Full Employment*. In October of that year, HC ('Nugget') Coombs, as Director-General of the Department for Post-War Reconstruction, sent a memorandum to Carver requesting that major improvements be made to economic statistics to facilitate national economic planning.

This period coincided with a general and growing interest in Keynesian economics as a way of preventing the extreme swings of a totally laissez-faire economy. This fed into a commitment to developing statistics to support this approach. These factors combined to encourage the further development of balance of payments and national accounts statistics, although these statistics are based on identities independent of Keynesian economics.

The first annual national accounts statistics, in current price terms, were published in 1945 by the Bureau in the Commonwealth Budget Paper *Estimates of National Income and Public Authority Income and Expenditure* for the period 1938–39 to 1944–45. In subsequent years national accounts estimates were included in the Commonwealth Budget Paper *National Income and Expenditure*. These budget papers were issued annually until 1991–92.



Shops in Burwood, NSW in 1947. The first national retail census was conducted in 1947–48.

A flood of new statistics

The growing demand for statistics led to experimentation with and eventual acceptance of the use of sample surveys as a valid alternative to the traditional census approach. Surveys of businesses relating to stocks (inventories), capital expenditure (including expected capital expenditure), repairs and maintenance, and employment and wages, were conducted from 1947. Data items concerning employment and wages were included in some surveys. The early surveys were conducted on a six monthly basis and covered most businesses in manufacturing, mining, transport, and wholesale and retail trade. Other industries were excluded, as were government owned enterprises. These data were not published, but were used for compiling the national accounts and were also supplied to Treasury. Quarterly surveys were started in the September quarter 1958.

The first retail census was conducted in respect of 1947–48. In 1950 a quarterly sample survey of retail establishments was introduced. In 1954 discrepancies showed up when retail sales from the 1952–53 census of retail establishments were compared with aggregated retail sales from the four quarterly retail establishment surveys for 1952–53. The investigations into this discrepancy led to an understanding of the importance of survey frame maintenance. The problems encountered with this survey provided important lessons for the benefit of the many surveys that followed. In the next decade, a large number of new statistics, derived from both census and sample collections, were added to the output of the Bureau.

Running an SP bookie's joint

Like many new recruits to the Bureau, Frank Calwell was sent out to obtain results from difficult survey respondents, in this case for the 1952–53 retail census. This was a common training tool used by the Bureau throughout the 1950s, 1960s and 1970s to give new staff a clearer understanding of the work of the Bureau. What Calwell got in this instance was a lesson in the importance of the independence of the Bureau.

'One Monday morning I set off in a Commonwealth car, and I ran my eye down the list of people to see. The easiest one I could see was a barber. Well, I thought, I'll be able to talk to this bloke. So I found his establishment, sidled in, told him the spiel about confidentiality and when he said "You know, Frank, they've been writing to me for bloody weeks about this, they even say I could go before the magistrate".

I said "Well, Bert, you are very foolish because that could happen". Bert said to me, "You know, Frank, this is just a cover for an SP joint, the little bit of barbering I do".

Anyhow my mate said, "Look, I've got to slip up to the bank, it's a quarter to ten, there's an exercise book here, each month I put down a rough figure of what I take from hairdressing, if you add up the 12 months, when I come back I'll sign the form". I said, "Well I think you'd be very wise, it's going to save you a helluva lot of trouble". So off he went.

'Then some of his customers from the weekend gambling started to arrive. "Where's me mate?" I said, "He's up at the bank". It turned out I was virtually running an SP joint. If the place had been raided it would have been interesting. Anyhow he came back, signed his form, and away we went. That really introduced me to the tone of the Bureau. I was rather proud of that because I got the bloke's confidence quickly. Had he gone before the magistrate, no doubt they knew he was SP-ing anyhow. So the fact that he disclosed this to me, I thought: well, I've achieved something.'

Frank Calwell interviewed in 2002.



Probably reflecting the growth in private ownership of motor cars, a survey of motor vehicles was conducted in 1947–48 as a precursor to the census of motor vehicles in 1955. Censuses of motor vehicles were also conducted in 1962 and 1971 and then at three yearly intervals until 1997 when they became annual. New motor vehicle registration statistics were first produced in 1948 and became monthly from July 1951. They were produced on a monthly basis until 2002 when they were replaced by monthly statistics on new motor vehicle sales.

In the immediate post-war period, governments were faced with a shortage of both dwellings and building materials, at a time when people, generally desperate to inject some sanity into their lives, were marrying, multiplying and consuming at a very great rate. A quarterly bulletin of building statistics was started in the March quarter 1948 with data back to the September quarter 1946. Data provided included numbers and values of commencements, completions and buildings under construction, classified by dwellings and other buildings.

In this period the Australian economy experienced some currency and trade problems, necessitating more detailed and systematic balance of payments statistics. In 1950, under the influence of Sir Roland Wilson, the Bureau published annual estimates for the balance of payments and international investment position for Australia for the period 1928–29 to 1948–49. For the first time these estimates were broadly consistent with the International Monetary Fund's Balance of Payments Manual and they were now expressed in Australian currency.

Roland Wilson was appointed as Secretary to the Treasury in March 1951 and took the Economic Advisor role with him. The Bureau's economic advisory role ended at this time, but it continued to be the source of the information on which economic decisions were based.



Thereafter, Treasury recruited a team of economists and annexed parts of other Departments with economic advisory functions.

In 1952 the Bureau released *Statistical Bulletin: Metals and Minerals, Australia*. This was its first publication containing data about mining establishments on a substantially uniform basis across the states.

Above: Cars crossing the Sydney Harbour Bridge, 1947. The first survey of motor vehicles conducted by the Commonwealth Bureau of Census and Statistics was in 1947–48.

Right: Cars crossing the Sydney Harbour Bridge, 1963. Note the complete change in vehicle models in one and a half decades. The first survey of motor vehicle use occurred in 1963.

Integrated economic censuses and beyond

At the end of the 1950s the formal unification of the state statistical bureaus with the Commonwealth occurred. However it was to take several decades for the formal unification to be fully realised in practical terms.

With the state bureaus not yet fully absorbed, the Bureau entered a new decade. It coincided with a period of rapid expansion in the production of economic statistics. The next 15 years were to see advances in national accounts and balance of payments statistics, a major investment in statistical infrastructure leading up to the 1968–69 integrated economic censuses, and a general expansion in the range of economic statistics produced by the Bureau. This represented the next major step in the long journey of the Bureau's economic statistics towards being fully integrated.

In 1960 the first official quarterly estimates of national income and expenditure were published in December. 1961 saw the introduction of the quarterly survey of company profits, conducted by the National Accounts Branch to provide data for the quarterly national accounts. The collection was conducted on a voluntary basis with special arrangements to maintain the security of these sensitive business data. Survey results were not published separately until the quarterly balance of payments was first published in 1962. In 1963 the first detailed annual national accounts publication, *Australian National Accounts, National Income and Expenditure, 1961–62* was published. Significantly, it contained the first constant price estimates of gross domestic product for Australia, derived using the expenditure approach.

A new fixed weight export price index, with updated weights and a time series from July 1959, was introduced in 1962 to replace the previous series. This was subsequently linked to a new interim series in 1970, and published until July 1979, which updated the index for significant changes in the relative importance of commodities exported from Australia since the late 1950s.

The first survey of motor vehicle use was conducted in 1963. They were then conducted about every three years until 1995 using a recall method. A new method, adopted in 1998, involved a quarterly collection and prior advice to the respondents selected in the survey. The survey is now conducted on an annual basis.

Data required by the Commonwealth Grants Commission highlighted the need for more uniform public finance statistics. Around the beginning of the 1960s, detailed government finance statistics were released relating to particular topics. Statistics relating to public sector debt were first published in 1957–58, to education in 1962–63, and to government pensions and superannuation schemes in 1963–64.

In terms of activity and human effort, all this was peripheral to the most absorbing and time intensive task of this period, preparing for the 1968–69 integrated economic censuses. The existing annual industry collections had been developed piecemeal, and had concentrated on capturing all activity seen as relevant to their particular field of interest.

'And basically the approach of all these collections was that you went after the kind of activity you wanted and anything that didn't suit you, didn't seem to fit your definitions, you just beaved it over the fence . . . So there was this great heap of stuff lying outside all these little fences that nobody had anything to do with.'

Col Clements interviewed in 2000.



It became apparent that in order to get a comprehensive view of the entire economy, a 'big picture' needed to be developed whereby data streams for each of the various industries could be brought together, without overlap or omission, to add to the whole. The vehicle for this was to be the integrated economic censuses. The development of the statistical infrastructure needed to facilitate the integration of economic censuses (and later surveys) was a highly significant undertaking that was to be the major focus of the Bureau for most of the 1960s.

The project had two main objectives – to significantly improve the quality and reliability of industry statistics and to provide data for use in compiling the national accounts. The project had for guidance the conceptual framework provided by the United Nations System of National Accounts. Though a revised version of the system was released in 1968, the Bureau was involved in the United Nations meetings in which the new system was developed, and so was able to incorporate this knowledge into the economic statistics integration project. Today the System of National Accounts continues to underpin the coherence of the Bureau's economic statistics.

The United Nations System of National Accounts

In the international arena, the post-war period was signified by a need by international organisations for comparable data about the economies of member nations. This was one of the factors leading to the development and publication by the United Nations of *A System of National Accounts* in 1953. This was the first version of a system that has become an accepted worldwide standard for producing national accounts.

Following very detailed consultation and some important developments in national accounting theory,

the 1953 version of the System of National Accounts was superseded by the 1968 version, which included significant revision and much more comprehensive economic accounting. A further revision, published in 1993, clarified and simplified the 1968 version, updated the system to reflect modern circumstances, and introduced satellite accounts for areas such as unpaid household work, tourism, health and the environment. The 1993 System of National Accounts was a joint publication of the United Nations, the Organisation

for Economic Co-operation and Development, the International Monetary Fund, the World Bank and Eurostat.

The continued monitoring of and research into the relevance of the System of National Accounts demonstrates the increasing importance, in the modern era, of internationally comparable economic statistics.

The integrated economic censuses in respect of 1968–69 covered the following industries: manufacturing, mining, electricity and gas, retail trade and selected services, and wholesale trade. Unlike the other industries, wholesale trade had not previously been subject to an annual census.

In the period leading up to the censuses, some major elements of statistical infrastructure were developed, involving groundbreaking conceptual work in areas that had never previously been attempted.

An integrated register of businesses and other organisations was developed, based on a hierarchical model of statistical units (locations, establishments, enterprises and enterprise groups). It was decided to use group employers (employer businesses registered to make income tax deductions from the salaries paid to their employees, group these and transmit them

to the Australian Taxation Office) as the source of information on businesses. Special legislation was needed to allow the Taxation Office to provide the Bureau with access to its group employer records. Once the necessary legislation was passed and the Bureau had obtained the list of group employers, a major collection, the group employer census, was conducted to obtain sufficient information on the activities undertaken and the structure of these businesses to be able to delineate them into statistical units in the integrated register. This information was then supplemented by undertaking interviews with the 1000 largest, most complex businesses.

I think it was probably Frank Horner who said, "We've got to go out and find out what happens with business records, what kinds of data they record in their accounting records. So let's interview the 1000 largest businesses in Australia".

That didn't sound too difficult ... the 1000 largest businesses! – You'd never ever mount it these days. Believe it or not, we were able to do this without ever having to produce an estimate of cost, without ever having to get any travel funds or anything like that. We just said we were going to do it and recruited people to do it, just sent them out and somehow the travel allowance and fares were paid from somewhere in the Bureau. But it was clear that our own staff and the staff of Economic Censuses could never manage this so the idea was born of getting volunteers, volunteers as in "I want three volunteers, you, you and you", from all over the Bureau to do these things. Some of them I think did it fairly willingly. It was a bit of perk to go off to Sydney or Melbourne or wherever for a week.'

Col Clements interviewed in 2000.



The value of a good classification – the wine industry in the 1960s

I can remember Harry Palmer, who was Chairman of the Australian Wine Board ... getting very concerned in the early 60s [that] our wine industry ... was expanding very, very rapidly. And the trouble was, it was being expanded by people who had no experience in the grape industry or the wine industry. They were people who had been successful in the boom of the early 60s in the manufacturing sector. I can remember organisations ... deciding it would be a good idea to have a Director's Red for the Board meetings, etc. So they were buying up tracts of land ... to plant grapes. Of course they didn't know anything about grapes so the cost accountant would ... then go ... through the official statistics looking at things and discovering that sultanas and gordo blancos were the big producers of grapes. So they were planting these heavy producing vines which of course were ensuring that we are going to become in Harry Palmer's terms, the "plonk capital" of the world, producing all this cheap wine.

He was able to get to the Prime Minister to explain this problem. A committee was set up which was called the Advisory Committee to the Prime Minister on Australian Grape Industry. I was appointed there as statistician on that particular group and there were people from the grape growers, the vignerons, marketers, the Wine Board ... We ... decided to make a supplementary collection of grape varieties ... Everybody who reported grapes on their agricultural census form would then move into the supplementary collection for the varieties ... we were asking people for each variety

showing the acreage, not producing acreage, acreage producing, acreage scrubbed out and tonnes of grapes produced. So we had some idea of the exits from the industry and the incomings to the industry in terms of variety.

'Well, that was a complete disaster; because when the summaries came to Canberra we had two common varieties, that was sultanas and gordo blancos. Every other variety was a regional, local, grower name or some other thing. So we then sat down and discussed the issue and set up a meeting with the state departments of agriculture to develop an Australian nomenclature of Australian wines.

'That was a very successful situation. I presented the report at the committee meeting and I can still remember Geoffrey Penfold-Highland – Penfold-Highland is a very well known name in the Australian wine industry – looking at this list and I could see him with a smile on his face putting the list into his briefcase to take home. Next year, Penfolds produced almost their whole crushing based on varietal names. That is the reason why now in today's wine environment varieties are a dominant feature of our labelling of Australian wines. I think that is a very interesting legacy of the role of the statistician.'

Alan Bagnall interviewed in 1999.

In order to undertake integrated economic censuses, other major developments were required in Bureau statistical infrastructure. This period saw the development of the first Australian Standard Industrial Classification, on the basis of which each unit on the integrated register was assigned a unique industry code based on its predominant activity, and thereafter could be included only in statistics for that industry. Other features of the infrastructure were standardised data item definitions and questionnaires, a new processing system including computer-based input and output edits, a tabulation system, and output specifications for establishment and enterprise statistics by industry.

While all this investment in statistical infrastructure was a major and enduring success (although it has evolved further, it still underpins the Bureau's economic statistics), the processing side of the 1968–69 censuses did not proceed to timetable. Very significant delays were experienced that disrupted statistical collections for some years (for example, no manufacturing census was conducted in respect of 1970–71). The main problems arose because the output specifications were not finalised early enough, the volume of output proposed to be produced was greater than the system could deliver, and the editing system was highly complicated with most edits too tightly specified, resulting in enormous numbers of edit failures to resolve.

'There were a lot of disenchanted people, for various reasons. I think the whole national accounting side of the Bureau was disenchanted because it wasn't going to get what it wanted, at least nothing like as soon as it wanted it. There was disenchantment from all the other statistical areas of the Bureau because they'd been starved of resources.'

Col Clements interviewed in 2000.

Nevertheless the 1968–69 integrated economic censuses resulted in the publication of a large number of detailed statistical bulletins, many of which were novel in that they summarised the results of the censuses across all industries covered.

Meanwhile in 1968 a small unit within the national accounts area had begun work on the National Income Forecasting Model. This was an econometric model built in collaboration with Treasury, using Bureau data, and the modelling phase of the project was the result of expert consultation between Treasury, the Reserve Bank and the Bureau.

In the latter part of this period, many other advances were made in national accounts and balance of payments. Annual gross product by industry at constant prices was first published in 1969, for the years 1959–60 to 1966–67. The first seasonally adjusted constant price estimates of quarterly gross domestic product were published in 1971 (quarterly seasonally adjusted national accounts estimates had first been published on a current price basis in 1967). Quarterly international investment statistics were first published in 1972. In 1973 major changes were made in the 1971–72 issue of *Australian National Accounts, National Income and Expenditure* to implement as far as possible the revised international standards contained in the 1968 version of the United Nations System of National Accounts. Also in 1973, the first official input-output tables were released for the reference year 1962–63. The first seasonally adjusted quarterly balance of payments statistics were published in 1974.

In 1973 the quarterly business surveys of stocks and capital expenditure were integrated, following the earlier integration of the annual and periodic industry censuses and a user review in 1972. The source for the population framework for the surveys was changed from files of

payroll tax-paying employer businesses to the integrated register, and the reporting unit was changed from the payroll tax unit to the enterprise.

In 1974 quarterly publications were released showing details of mineral exploration expenditure and petroleum exploration expenditure, together with other related information about exploration activities. These publications have more recently been combined into a single quarterly release.

Over the period 1969 to 1976 a range of new producer price indexes was developed. These indexes, which are still published, comprise materials used in house building, copper materials, materials used in manufacturing, and articles produced by manufacturing industry.

Seasonally adjusted estimates were developed to make major monthly and quarterly economic statistics more analytically useful. From 1967 an annual publication *Seasonally Adjusted Indicators* was published to provide information on the methods used to compile the Bureau's seasonally adjusted estimates. It also provided time series and graphs for seasonally adjusted series. It was finally discontinued in 1983 as by that time seasonally adjusted estimates were included in most regular monthly and quarterly releases where the underlying original estimates were identified as being seasonal.

Rotating economic censuses and other developments

Once processing of the first integrated economic censuses was completed, development work continued. The strategy had now changed somewhat, and the new aim was to conduct annual censuses for the core industries (manufacturing, mining, and electricity and gas) and to include other industries on a rotating basis. Retail trade was included in respect of 1973–74, 1979–80 and 1985–86 and wholesale trade for 1981–82. Additional industries covered during this period were construction (1978–79 and 1984–85) and transport (1983–84). During the period 1985–1987 a series of publications documented the framework for the Bureau's integrated economic statistics. These covered the conceptual and operational framework of integration, and modified standards for statistical units and classifications by industry and institutional sector.

Meanwhile, the introduction of new surveys continued. The quarterly survey of construction (other than building) activity, covering the private sector only, was started in respect of the December quarter 1974. New collections were established for tourist accommodation, and for research and experimental development.

Monthly balance of payments publications were introduced from April 1976, and these continued until December 1996 when they reverted to a quarterly frequency because of quality concerns arising from the lack of monthly data for some components of the balance of payments.



A lack of monthly data for some components of the balance of payments resulted in considerable volatility in the monthly release of balance of payments in the 1980s and 1990s, much to the amusement of cartoonists.

In 1978 actual and expected sales were added to the quarterly survey of stocks. Expected sales were later discontinued. Quarterly capital expenditure data were collected by state from the December quarter 1978.

The publication *Australian National Accounts: Concepts, Sources and Methods* was released in 1981, the first in a series of such publications covering a wide range of economic statistics, including balance of payments and international investment position statistics, international merchandise trade, the CPI, producer price indexes and government finance. The set of such publications is now available electronically on the Bureau's web site in the Statistical Concepts Library.

In 1983 the survey of employment and earnings was introduced. This collection was important as a source of data for estimating compensation of employees in the national accounts and for detailed data on employment by state and by industry. It was one of several surveys that were redeveloped, between 1981 and 1983, as sample business surveys based on the integrated register. This survey replaced the payroll tax based data that had become unreliable because of significant increases in the exemption levels for employer businesses subject to state payroll tax, increases that varied by state.

As part of the effort to improve the cost efficiency of statistical work, in 1983 a small team of Bureau subject matter and methodologist staff started a joint project with the Australian Taxation Office to examine options for expanding the use of taxation records. The main aim was to use taxation records to replace traditional data sources in the production of new and existing business statistics. The taxation data available at the time were not sufficiently accurate to support these plans and only limited use was envisaged at this time. However this was an early step in a development process that led to the current use of taxation data. This project, and the negotiations with the Taxation Office related to it, culminated in 1986 in the amendment of the *Income Tax Assessment Act 1936* referred to below, to give the Bureau access to data from the identified taxation records of businesses for statistical purposes.

The export price index was significantly revamped in 1979 and is a continuing series. The import price index was introduced in May 1983, replacing the series previously published by the Reserve Bank of Australia. The Bureau's series relied on data collected directly from importers, whereas the Reserve Bank series was constructed using export price indexes of Australia's

trading partners adjusted for exchange rate movements and shipping lags.

The first official estimates for state accounts and for capital stock were published in 1987.

Quarterly estimates of gross domestic product by industry at constant prices were first published in 1988. These estimates were later incorporated in the regular quarterly national accounts publication, making it possible to calculate an average measure of gross domestic product based on the income, expenditure and production approaches.

Statistics on foreign debt and the net international investment position were introduced in 1987 and 1989, respectively.



New developments in the economic statistics strategy

In 1987 work started on a major review of the Bureau's economic statistics strategy, looking afresh at the statistical infrastructure developed originally in the mid 1960s as part of the integrated economic censuses project, and addressing the shortcomings of the rotating economic censuses approach. The revised strategy also aimed to take advantage of new developments affecting administrative by-product data from the Australian Taxation Office. In the period that had elapsed since the first stages of the integration project, there had been numerous changes in the structure of the economy, but also in the availability of administrative by-product data to help measure those changes.

The crucial development in this regard, after years of negotiation between the Bureau and the Australian Taxation Office, was the change to the *Income Tax Assessment Act 1936* in 1986 mentioned above, to specifically grant the Bureau access to the income tax data of identified businesses (data reported by businesses to the Taxation Office for the purpose of assessing their liability to pay income tax). As well, a wealth of experience had grown among Bureau staff, which could be applied to rethinking the strategy. The resulting strategy evolved over the 1990s. Initially, it focused on improving access to information from the Australian Taxation Office for updating the integrated register of businesses and addressing the reporting load on responding businesses.

The review of the use of business income tax data, not only as a source for improving the integrated register, but also for replacing or supplementing the direct collection of data from businesses by the Bureau, could take advantage of and influence the work initiated by the

Australian Taxation Office in redesigning its computer systems and introducing self assessment. Through lengthy negotiations, Bureau requirements were considered in the design of the items to be collected on income tax returns, with a view to maximising their usefulness for statistical purposes.

A closely related development was the work to reconsider how the structure of large businesses affected their ability to provide the data requested of them. This led in 1987 to the adoption of a new statistical units model for the business register. The Management Unit was designed to align with the real world structures of businesses, especially larger ones, with the objective of making reporting by businesses easier and more accurate. Large Business Units were created within the business register areas of each office, with the task of profiling the structure of the largest businesses, so that ABS approaches to these businesses for statistics reflected as closely as possible their current structures.

An 'Impacts' working group was formed to monitor and manage the statistical effects of the revised reporting structures on the data from all the annual and sub-annual surveys of businesses. The working group soon began to take a broader interest in how the quality of the business register affected output data. It quickly emerged that attention had to be given to the multitude of smaller units on the register as well, particularly the births and deaths of these businesses. Change in an economic indicator could come from change in the number of live businesses or in the average value per business. Estimates of live businesses were significantly affected by how births and deaths were treated – and these treatments tended to vary collection by collection. Comparisons of estimates of total employment between the (business register based) survey of employment and earnings and the (area



Between the 1980s and 1990s some traditional collections were discontinued, rationalised or had their frequency reduced. The agricultural census was moved from an annual to a five yearly census with surveys in the intercensal years. At the same time collections in new and growing industries, such as information technology, began.

sample based) monthly labour force survey suggested that the under coverage of the business register was increasing over time. Ensuring that change in the number of live businesses was recognised in a timely manner was a problem that led to further methodological involvement with the business register. Although it took some years to resolve, the methods currently in place have led to substantial improvements in the accuracy and cohesiveness of business statistics.

In 1989 the Bureau received its first computer file of group employers, a comprehensive file of all group employers known to the Australian Taxation Office. The aim was to move to a system whereby the business register was updated using electronic tax data, to replace the old 'paper based' updating system. By January 1991, with the receipt of a second file, the slow process began of settling the business register into a new and better updating routine.

This process confirmed that over time there had been leakage from the old paper based updating process. Following laborious comparisons of birth dates on the tax records with those on the business register, collection areas and the National Accounts area were able to back cast historical time series. Implementing these changes consistently and coherently was a challenge, but led to new techniques for ensuring that estimates from different areas and processing systems reflected a consistent view of the number of businesses in existence.

The story of business surveys during the 1980s was a drive by the Bureau's methodologists and its subject matter areas to fully understand quality, and to achieve it throughout the whole survey process. This encompassed improved forms design, editing studies, revising definitions of statistical units, maintaining the relevance of the business register throughout a changing economic cycle, improved sample and frame maintenance procedures, and the application of modern communication principles for publications. They also drove more a consistent application of methods across the different business collections.

The decade from the mid 1980s to the mid 1990s also saw a move into service industry collections, together with some reductions in surveys of the traditional goods producing industries. This change of emphasis reflected both the growing importance of service industries and resource constraints on the Bureau. Some collections were discontinued, others were rationalised and their

frequency reduced. The agricultural census, which had been conducted annually until 1996–97, was made five yearly with surveys in intercensal years.

Resource requirements for manufacturing were reduced through the use of short forms for small businesses, size cut offs and sampling. In 1992–93 the collection was put fully on a sample basis and has been so for most subsequent years, although censuses are still conducted at five yearly intervals.

The years 1986–87 saw the establishment of a significant program of surveys of service industries, with collections for particular industries being repeated periodically, the frequency dependent on the economic importance of the industry. In addition, a number of surveys have been conducted relating to the information and communication technology industries and to the use of technology by different sectors (governments, businesses, farms and households).

Recent developments (1990 to 2004)

The 1991 Premiers Conference agreed that all states and the Commonwealth should adopt a uniform presentation of government finance data as part of their budget documentation, based on Bureau standards for the presentation of such data.

An environment statistics unit was established in 1991. While environment statistics have links to social statistics, there are also strong links to many areas of economic statistics (such as agriculture, manufacturing and the national accounts). Publications have been released containing environmental satellite accounts for fish, water, minerals, and energy and greenhouse gas emission, as well as other statistics relating to salinity and energy.

Handover of financial statistics from the Reserve Bank of Australia to the Bureau

In 1990 a revised edition of *Australian National Accounts: Concepts, Sources and Methods* was published, and a number of new national accounting statistics were released including multifactor productivity, unpaid household work, and quarterly financial accounts. The latter replaced annual flow of funds tables previously produced by the Reserve Bank of Australia, but handed over to the Bureau in the environment of financial deregulation, to benefit from the Bureau's general statistical infrastructure and to enable compilation of the accounts according to the standards of the United Nations System of National Accounts.

For most years in the 1980s there was a large 'balancing item' between sectoral net lending as measured in the Bureau's capital account and as measured by the financial account compiled by the Reserve Bank. Investigating the causes and implementing solutions proved very difficult, with the detailed work required being hampered by staff operating under different legislation (and therefore confidentiality constraints), in different corporate cultures, and in different cities. Given that the Bureau compiled income, expenditure and capital accounts and also compiled both public finance and balance of payments statistics that feed into the national accounts, it was agreed that the Bureau was more appropriately placed to undertake the work.

A number of factors influenced this move:

- It was assumed that a significant source of discrepancy resulted from the rapid deregulation of the financial system at that time. The sources

and methods employed by the Reserve Bank to compile financial accounts depended heavily on the administrative data provided to it as regulator. The growth of financing activity outside its regulatory ambit, for example funds management of increasingly significant superannuation balances and the parallel growth of equity and debt security markets, meant that statistical infrastructure needed to be improved. The ABS was better placed with general purpose data collection powers and processing infrastructure.

- The annual Reserve Bank series was compiled with a significant lag to the reference period, reducing the usefulness of the analysis. At the same time investigating historical discrepancies proved difficult. The United States and Canadian experience suggested that quarterly compilation would improve the usefulness of the accounts and result in data confrontation in a more immediate setting than was possible annually.
- The Reserve Bank series was compiled to a set of standards that reflected data availability rather than the United Nations System of National Accounts recommendations followed by the ABS in compiling the rest of the national accounts. It was clear that to improve the overall cohesion of the accounts, they needed to be compiled within the same conceptual framework.

The publication *Environment Protection Expenditure, Australia* contains one of the environment satellite accounts introduced in the 1993 SNA. Australia was the first country to publish this environmental satellite account. An environment and natural resources survey of local governments was run in 1997–98 as a voluntary survey with experimental estimates, and in 1998–99 under the Census and Statistics Act. It focused on the role of local governments in providing environmental management for their jurisdiction. It was developed as input to the environment protection expenditure accounts and is published as *Environmental Expenditure, Local Government, Australia*.

Environment compendium publications, containing statistics from many sources, have been released regularly since 1992. A household survey to measure people's attitudes and practices relating to environmental issues was run biennially from 1992 and annually from 1998, and results are published in *Environmental Issues: People's Views and Practices*.

In recent years a number of major environmental surveys have been conducted and published. They include the environment management survey, published as: *Environment Protection, Mining and Manufacturing Industries, Australia*; *Salinity on Australian Farms* based on a survey of 20 000 farms; *Energy Statistics 2002–03* from a survey of 15 000 businesses; and surveys on waste management published for 1996–97 and 2002–03.

The Australia and New Zealand Standard Industry Classification was released in 1993 to replace the Australian Standard Industrial Classification. The classification was jointly developed with Statistics

New Zealand. It aims to provide a more balanced classification with regard to both services and goods producing industries, to move as closely as possible to the International Standard Industry Classification, to allow for technological developments, and to meet user requirements for detailed industry categories. All economic statistics compiled by the Bureau adopted the new industry classification.

The Bureau conducted its first Innovation Surveys in 1993–94 (further surveys were conducted in 1996–97 and 2003).

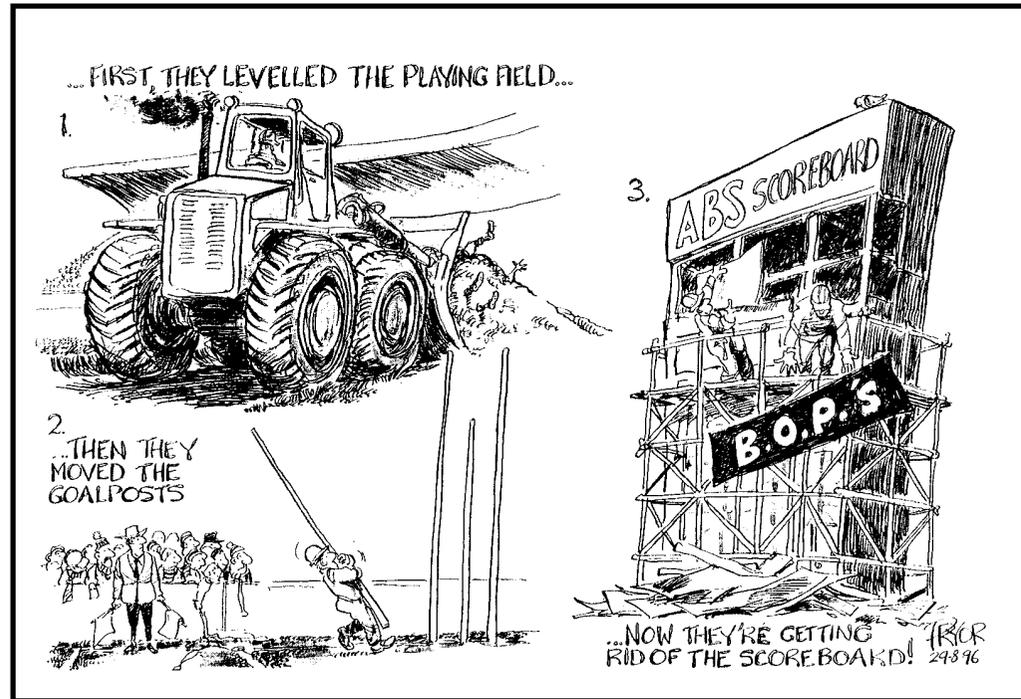
A major element of the economic statistics strategy in the late 1980s and early 1990s was the development of the economic activity survey, an annual sample survey of businesses in all industries of the market sector of the Australian economy. This survey was important as the first from which measures of operating income, operating expenses, value added and its components and some balance sheet items were produced simultaneously for all industries in the market economy from a Bureau collection. The effective sample size was increased from 15 000 to 90 000 by the inclusion of data from the annual income tax returns of the smallest businesses. The survey now underpins and provides a context for the Bureau's annual and rotating detailed surveys of individual industries, which are dovetailed with it to avoid duplication and reduce the load on respondents. The estimates from the economic activity survey enabled the construction of balanced supply and use tables that were used to benchmark annual national accounts estimates of value added by industry. This advance initially involved producing balanced supply and use tables for the years 1994–95 to 1996–97.



Ian Castles and the then Minister for Trade and Overseas Development John Kerrin, at the launch of the Bureau's first environmental compendium publication, *Australia's Environment: Issues and Facts* in 1992.

A number of reviews were triggered in the early 1990s by problems in the quality and timeliness of source data used in the quarterly national accounts. In July 1994 one such review, the 'Study into Source Data and the Quarterly National Accounts' found that 'problems and pressures of measurement are more acute in ... period[s] of lingering recession and tentative recovery ... These are periods which expose weaknesses, in source data, statistical infrastructure, compilation infrastructure and methods and culture'. The review found problems in all these areas and made detailed recommendations for their rectification.

In view of the need for major revisions to the national accounts and some loss of user confidence the then Australian Statistician, Bill McLennan, commissioned a further review to examine a number of issues. This review was completed in September 1995, making a number of recommendations regarding user focus and effective use of staff, and suggesting a range of measures relating to the reliability, presentation, coverage and timeliness of the accounts. It also suggested a more collaborative approach to communication between National Accounts and subject matter areas. As a result, there was a significant improvement in this relationship in subsequent years.



Following the deregulation of financial markets in the early 1980s there was a strong focus in the media on the size and implications of monthly current account deficits. The ABS and some key users became increasingly concerned about the interpretations being

placed on the volatile monthly movements. In December 1996 the monthly publication was discontinued, to encourage users to focus on quarterly balance of payments estimates which could draw on a full set of quarterly data sources.

In the early 1990s the survey integration project was undertaken to standardise survey methods for quarterly economic surveys. It involved the adoption of common population frames, common sample and frame maintenance procedures, standardised new business provisions, and the standard treatment of businesses that had been sold, ceased operations or changed activities.

Experimental national balance sheets were released in 1995 in an Occasional Paper, *National Balance Sheets for Australia, Issues and Experimental Estimates, 1989 to 1992*.

Enormous strides were made in combining data collected directly in Bureau surveys with administrative by-product information to improve the estimates, further reduce respondent burden and minimise Bureau costs. In particular, from 1995–96 the data from large samples of income tax records of identified businesses were used to enrich the estimates from much smaller samples in Bureau surveys such as the annual economic activity surveys and the industry surveys.

The late 1990s saw the implementation of a new input-output strategy and chain volume measures of real output. The former involved the compilation of balanced supply and use tables that were sufficiently timely to allow the annual estimates of gross domestic product to be fully reconciled and balanced. Annual national accounts benchmarks were derived for the first time using balanced supply and use tables that incorporated data from the annual economic activity survey. A single measure was presented for gross domestic product on both an annual and a quarterly basis. Any differences between the single measure and the sum of the components for the three

approaches to measuring gross domestic product – income, expenditure and production – were shown as explicit statistical discrepancies. There are no statistical discrepancies on an annual basis for the years for which balanced supply and use tables have been compiled.

From 1998 chain volume measures progressively replaced constant price estimates in all Bureau publications that had previously included constant price estimates. Chain volume measures allowed removal of the effects of price movements while taking account of rapid changes in products due to technology and other factors, and replaced the old practice of producing constant price estimates relative to prices in a given base year, which were then revised about every five years with rebasing to a new base year.

The latest international standards for national accounts and balance of payments (the 1993 edition of the United Nations System of National Accounts and the fifth edition of the International Monetary Fund's Balance of Payments Manual) were also implemented in the late 1990s, the latter in the September quarter 1997 and the former in the September quarter 1998, at which point the national accounts and balance of payments became fully consistent.

The initial balanced supply and use tables were produced for the years 1994–95 to 1996–97, and have since been produced on an annual basis. The economic activity survey data, along with data from other Bureau collections and administrative data – in particular taxation data – are important in the construction of supply and use tables.

One of the original aims of the integrated economic censuses had been the use of annual data collected by the Bureau, for value added and gross operating surplus, to provide benchmark estimates for the annual national accounts. 1998 saw the close of a key chapter in the saga of economic statistics integration with the realisation of this aim after 30 years.

The increasing decentralisation of Australia's wage fixing arrangements resulted in the lack of a reliable indicator for the analysis of wage trends. This was identified as a significant statistical gap by a number of major users of ABS earnings data. At the same time, changes in employer obligations in the areas of superannuation, workers' compensation and payroll tax increased the importance of non-wage costs when measuring trends in labour costs. The Bureau therefore developed a labour cost index comprising an integrated set of indexes covering both wage and non-wage costs. A quarterly wage cost index was first produced by the Bureau in 1998. From mid 2004 it was published in *Labour Price Index, Australia* along with annual non-wage cost indexes.

In 1998–99 initial moves were made to convert government finance statistics for all states and the Commonwealth from a cash basis to an accrual basis. As well as providing a more accurate picture of public finances, this change brought the public sector data to the desired conceptual basis for the national accounts.

Price indexes for transport (freight) and storage, and property and business services were first published in 2000. Development of service industry price indexes had begun in 1994. Stage of production producer price indexes were also first published in 2000, with the aim of supporting the analysis of price changes as commodities flow through the production process.

Satellite accounts were released for tourism (in respect of 1997–98, 1999–2000 and 2000–01) and non-profit institutions (2001–02). In 2000 the third set of estimates for unpaid household work was released in an Occasional Paper *Unpaid Work and the Australian Economy, 1997*. A major data source for these estimates was the 1997 Time Use Survey.

Significant changes to the taxation system from 2000 offered the Bureau both statistical opportunities and challenges. The changes included the introduction of a goods and services tax and an associated Australian Business Number (ABN). The unique ABN has provided a key for linking information about businesses, including information from the Australian Taxation Office, Bureau surveys and other administrative sources. The linked information provided the core for the development of a Bureau business longitudinal database. Although still at an early stage of development, this has the potential to support significant analytical applications. The business activity statements that must be lodged by those with goods and services tax liabilities and/or entitlements contain only a limited range of data items, but the Bureau has been able to use that information to develop improved survey design, estimation and imputation methods. Further opportunities are being explored to determine whether data from the business activity statement can be used to supplement or replace certain existing Bureau series.



Peter Costello, Treasurer and a key user of economic statistics.

In association with the introduction of the goods and services tax and the ABN, the Australian Taxation Office was also charged with creating a whole-of-government register of businesses, the Australian Business Register. The Bureau took the opportunity offered by this cross-government initiative and moved in 2002 to use data from this register, along with associated information from the Australian Taxation Office, as the sole source of updating information for simple businesses on the Bureau's business register. Such simple units represent the majority of businesses on that register.

The Bureau also aligned its business units model, which determines the way in which business structures are represented on the Bureau's business register, with the unit underpinning taxation reporting requirements. That move further enhanced the reliability of data from Australian Taxation Office sources and Bureau surveys. In addition, the move to the Australian Business Register facilitated the inclusion of selected non-employers in Bureau surveys.

In 2001 the three separate quarterly business surveys for inventories (formerly stocks) and sales, profits, and private sector employment and earnings were combined into a single survey, and the first combined publication, *Business Indicators, Australia*, was released in 2002 for the September quarter 2001. This represents a further significant milestone in overall integration of Australia's economic statistics.

Measuring Australia's Progress was developed in recognition of the fact that the welfare of Australians is not determined solely by economic growth as measured by GDP. It was first released in 2002 and provides a range of economic, social and environmental indicators that are relevant to an assessment of how the welfare of Australians has changed over time. In 2003 the Australian Statistician, Dennis Trewin, topped the society category of *The Bulletin's* Smart 100 awards for this research.

The last 40 years have seen the development of comprehensive international statistical standards. The importance of standards to support statistical integration came to be recognised internationally to enable the statistics of countries to be validly compared and aggregated.

'For many years these standards have been put together and sanctioned at the international level. The major arena is based on the United Nations, and within that on the UN Statistical Commission (UNSC), a representative group of official statisticians from a range of countries, which is a subsidiary body of the UN Economic and Social Council. The role of UNSC should be paramount in terms of standard setting, but in reality it acts as an advisory body to the UN Statistical

Division, the statistical arm of the UN Secretary-General. Liaison is thus still necessary with the statistical arms of other UN bodies, such as ILO, FAO, WHO and UNESCO, and with international agencies such as the World Bank, the International Monetary Fund and Eurostat, the statistical arm of the European Union.'

Bill McLennan, 'The development of official statistics in Australia, and some possible future challenges', in *Year Book Australia 2001*, No. 83.

The Bureau is an active international citizen in the field of economic statistics. Bureau staff have consistently provided significant contributions to agencies such as the International Monetary Fund, the Organisation for Economic Co-operation and Development, the United Nations Statistical Division and the Economic and Social Commission for Asia and the Pacific. This has included significant staff contributions to the development of the United Nations System of National Accounts 1968 and 1993, the International Monetary Fund's Balance of Payments Manual and Government Finance Statistics Manual, and membership of a number of groups of experts from national statistical agencies to develop improved concepts and practices in a range of economic statistics including services statistics, environmental accounting, capital stock and non-financial assets. Former staff hold senior positions in the key international agencies with responsibility of economic statistics.

Right: Rob Edwards, First Assistant Statistician of Economic Accounts Division in the 1990s and from 2000 Deputy Australian Statistician for the Economic Statistics Group. In 2004 he retired from the ABS to head up the International Monetary Fund's Statistics Department.



Key relationships

The Bureau has enjoyed a close relationship with a number of key agencies throughout the years.

The Commonwealth Treasury is a major user of the Bureau's economic statistics. Budget papers routinely contain government finance statistics, and national accounts data and various forecasting tools are used in Treasury policy work.

The Bureau has a growing relationship with the Australian Taxation Office, through access to business tax data for use in compiling statistics. The Bureau has always made clear, and found ready acceptance within the Taxation Office, that the access to identified individual records is strictly a one way flow from the Taxation Office to the Bureau.

Other Commonwealth government agencies with which the Bureau has a close relationship regarding economic statistics include the Reserve Bank of Australia, the Grants Commission, the Department of Immigration and Multicultural and Indigenous Affairs, the Department of Industry, Tourism and Resources and the Department of Foreign Affairs and Trade.

In keeping with the Bureau's practice of establishing user advisory groups, the economic statistics user group was established in 1996. It usually meets twice a year to provide advice to the Bureau on developments in economic statistics from a user perspective and to bring major user concerns on economic statistics to the attention of the Bureau. The Bureau also prepares detailed information papers outlining proposed changes to existing statistics, and meets regularly with major users.

There is a continuing and strong demand for economic data at the state level, and this has led to the development of relationships between the ABS and state treasuries, as well as with other state government agencies. A state accounts user group has recently been established to enhance that relationship.

Throughout the years the Bureau has demonstrated a strong commitment to a growing set of relevant economic statistics, progressively informed by the development and adoption of statistical frameworks and standards to give coherence to this vast body of statistics. In the early years, these were produced on a seemingly ad hoc, case-by-case basis, but within the limitations on methods available to compile these statistics, each collection was the result

of many hours of analysis and theorising, and of largely manual compilation and computation. In the post-war period, as governments applied Keynesian economic management strategies, and wished to assess the effectiveness of these strategies and to compare Australia's performance with those of other nations, the need arose for a more comprehensive economic statistics system. Thus began the Herculean task of integrating the Bureau's economic statistics. This task required a very long and clear view of the goals of the Bureau, and the dogged completion of many complicated steps towards that goal, some of which have been realised only recently.

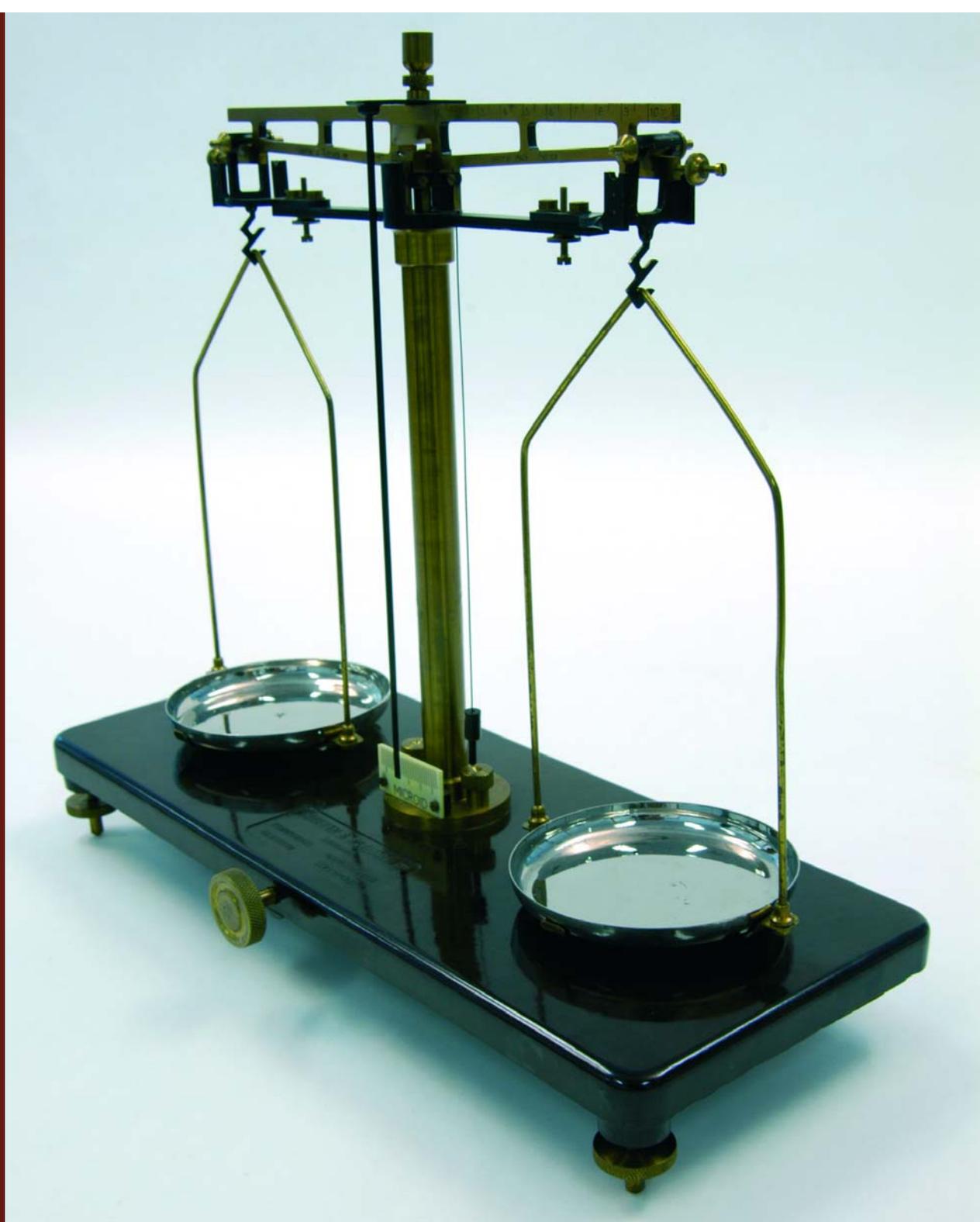
The economic statistics of today are consistent with the major international statistical conventions. Just as important, they provide a clear and comprehensive picture of the Australian economy, and thereby keep all sectors of the Australian community properly informed – a major prerequisite of a healthy democracy.

A photograph of an open, handwritten record book. The pages are filled with dense, neatly written entries in a grid-like format, organized into columns and rows. The handwriting is in dark ink on aged, slightly yellowed paper. The book is open to a page showing a list of items and their corresponding prices, with some entries underlined or highlighted.

Above: Handwritten record book of average retail prices for Tasmania from 1925 to 1933. Prices listed include everything from pudding basins and cashmere stockings to bread and mutton.

Right: Scales produced by Griffith and Tatlock Ltd, London and used in the Bureau to evaluate fabric quality. Fabric weight was initially one of the factors used to compare fabric quality from one retail price index to another.

Far right: Detail of a Mullen Burst Testing machine, patent 1909, used to measure how much pressure could be applied to fabric before it burst.



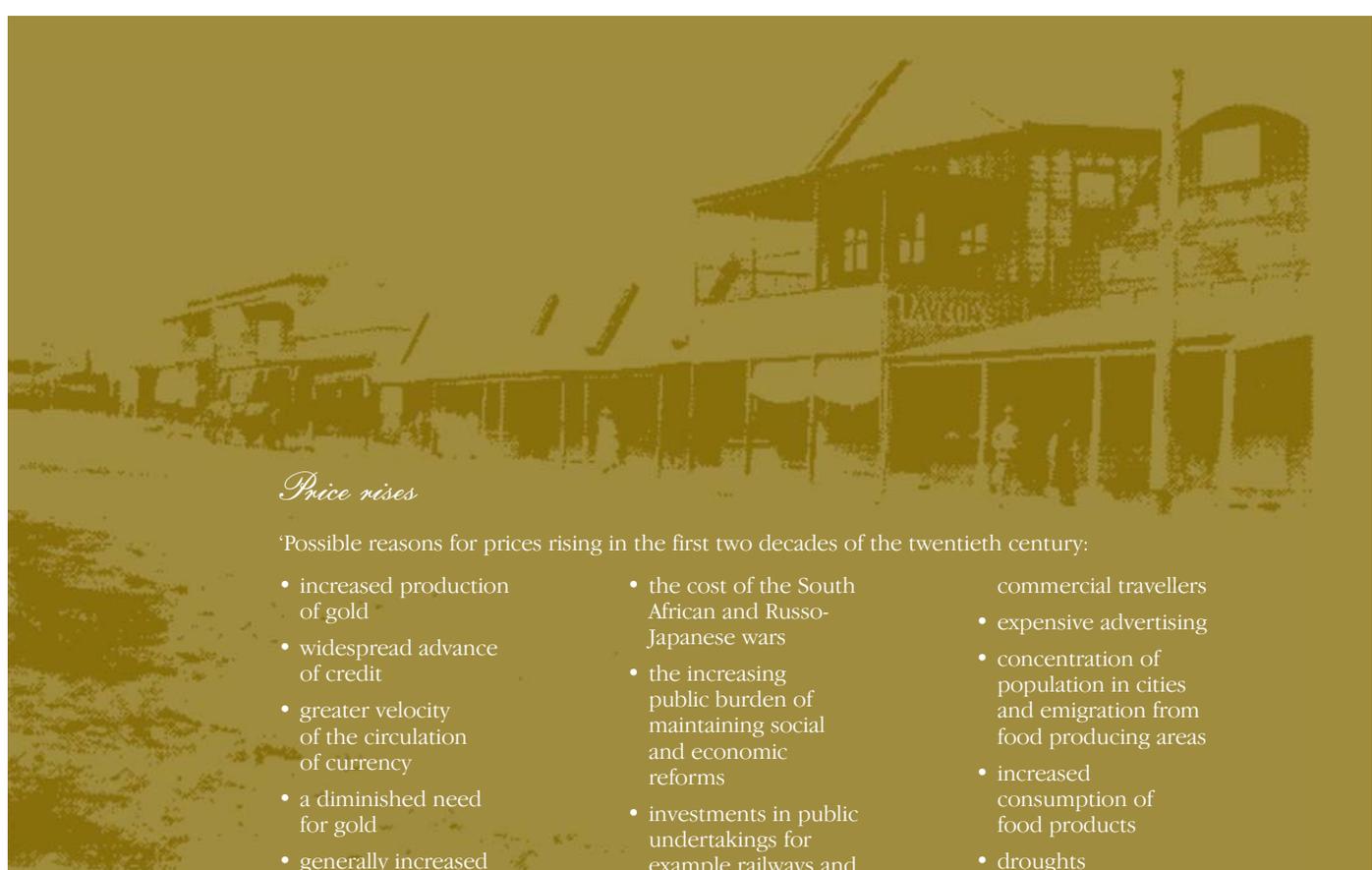
Measuring your money's worth
FROM THE RETAIL PRICE INDEX TO THE CPI

chapter four



From Federation

Retail price statistics were started in Australia early in the 20th century. This development needs to be viewed in the context of the commitment of the Australian public to nationhood. Federation was a recent accomplishment, and had been preceded by a decade of severe economic depression. The Australia to which the people were committed was an egalitarian democracy in which all had the chance to strive for a better life for themselves and their families. The notion that rising prices might interfere with this goal attracted attention in all quarters.



Price rises

'Possible reasons for prices rising in the first two decades of the twentieth century:

- increased production of gold
- widespread advance of credit
- greater velocity of the circulation of currency
- a diminished need for gold
- generally increased banking facilities
- the effect of legislation affecting tariffs
- merely a change in standard of living, reflecting luxury and extravagance, so therefore it should be called the cost of high living rather than the high cost of living
- an increase in the world's armaments
- general governmental extravagance
- the cost of the South African and Russo-Japanese wars
- the increasing public burden of maintaining social and economic reforms
- investments in public undertakings for example railways and public works
- the operations of trusts, combines and trade agreements
- the evil of over-capitalisation
- increased wages, shorter hours and diminished output resulting from trade-union conditions
- increase of middlemen and middlemen's profits
- the substitution of modern methods of soliciting business by commercial travellers
- expensive advertising
- concentration of population in cities and emigration from food producing areas
- increased consumption of food products
- droughts
- the increased cost of primary products because of higher land values and wages
- increased cost of transport as production is pushed into areas not easily accessible
- the progressive reduction of natural resources
- the progressive reduction of soil fertility.'

CBCS, *Prices, Price Indexes and the Cost of Living in Australia*, Labour and Industrial Branch Report No. 1, 1912.

Knibbs investigates

Five years into his role as Australia's first Commonwealth Statistician, Knibbs began work on Australia's first retail price index.

'Probably no subject has recently attracted a greater amount of public attention than the extent of variations in prices and the exchange-value of gold, a matter which, in its relation to the cost of living, is fraught with importance to every section of the community. It is stated in many quarters that during the last few years there has been a world-wide rise in the cost of living, and that this fact is borne out by the deep-seated unrest which has expressed itself in many ways in various countries – in bread and meat riots, in resentment against taxation, in strikes and syndicalism, in socialistic agitation, and in blame of all sorts of persons and conditions.'

CBCS, *Prices, Price Indexes and the Cost of Living in Australia*, Labour and Industrial Branch Report No. 1, 1912.

Knibbs was a practical man and considered that the best contribution he and the Bureau could make to this situation was to produce a measure of price change.

'Before any adequate discussion of the situation is feasible, however, it is necessary that price-fluctuations should be accurately measured, and such measurements should precede any attempt to remedy the condition of things.'

CBCS, *Prices, Price Indexes and the Cost of Living in Australia*, Labour and Industrial Branch Report No. 1, 1912.

And being Knibbs, he would produce it in a thorough, well researched and theoretically defensible way.

An enquiry into the cost of living

Aware of the use of the concept of cost of living some years previously in the 1907 'Harvester Case', Knibbs in 1910 initiated a year long enquiry into the cost of living in Australia. This study involved asking volunteers to record, in a specially prepared diary, all their expenditure for a period of twelve months.

Harvester Case

The Harvester judgement under the *Excise Tariff Act 1906*, of Justice Higgins in the case of *R v. Barger; Commonwealth v. McKay, (1907)*, enshrined the concept of paying as a minimum, to every adult male unskilled worker, a wage 'appropriate to the normal needs of the average employee regarded as a human being living in a civilised community'.

This was a very long period for volunteers to be expected to record every expenditure detail, and the response rate for the enquiry was disappointingly low. Of 1500 budget books distributed only 222 were returned and 212 proved usable. However, from this Knibbs was still able to glean a limited snapshot of living conditions for families across a range of family circumstances and income levels, covering relative expenditure on housing, food, clothing, and fuel and light. A report, 'Inquiry into the Cost of Living in Australia', was published in the Commonwealth Year Book of 1911. A second study in 1913, covering only a four week period, produced a similar response.

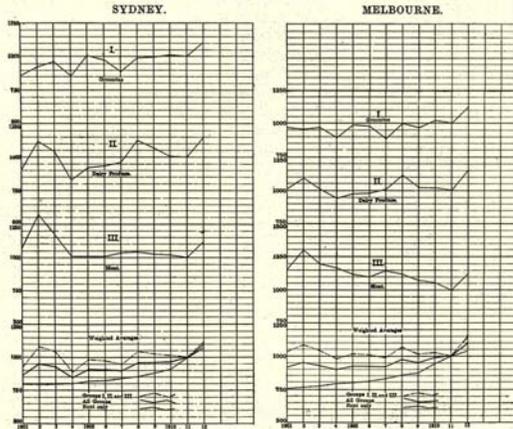
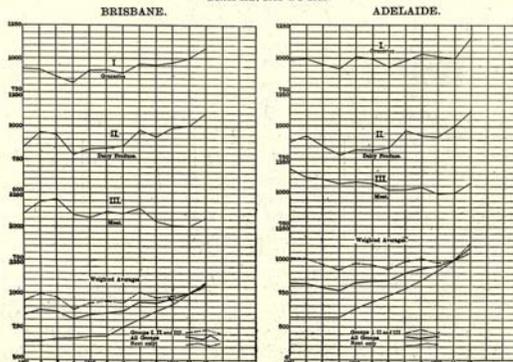
Knibbs then proceeded to study extensively both the theory of indexes as it then stood and the application of this theory in many countries around the world. He developed a considered view of the best way to apply index theory that would comply with fundamental principles. At the same time extensive analysis was conducted into the type of information necessary to compile such an index. In the case of retail prices it was found necessary to collect more information than had previously been sought by the Bureau.

Rather than weighting price-ratios, the 'aggregate expenditure method' was selected as the most practical way to resolve the technical and theoretical requirements of an index. Forty-six items of food and groceries were to be priced for each new index. Together with house rental prices, these items and their relative quantities were adopted as indicators of consumption by the Australian community. Later this selection of items came to be known as a 'basket of goods'.

The aggregate expenditure method

'The average price for each commodity included is multiplied by its respective "mass unit". The "mass-unit" represents the relative extent to which each commodity is used or consumed, and is regarded as constant over the period under review. By taking the aggregate expenditure for any one year as base, the index-number for the relative aggregate expenditure for any other year is readily calculated.'

CBCS, *Prices, Purchasing-power-of-money, Wages, Trade Unions, Unemployment and General Industrial Conditions*, Labour and Industrial Branch Report No. 10, 1919.

RETAIL PRICES, HOUSE RENT, AND COST OF LIVING IN METROPOLITAN TOWNS.
GRAPHS, 1901 TO 1912.RETAIL PRICES, HOUSE RENT, AND COST OF LIVING IN METROPOLITAN TOWNS.
GRAPHS, 1901 TO 1912.

Australia's first retail price index

In December 1912 the Bureau published the culmination of this effort, the first Labour Report, 'Prices, Price Indexes and Cost of Living in Australia'. The report contained an extensive description of the methodology underpinning the indexes, the reasons for choosing particular methods over others, and the indexes themselves. Included were tables showing price indexes for food, clothing, rent, and all these combined, for each of the six capital cities and for 30 towns. An index for 200 towns was later introduced. These indexes were then released more or less yearly, with a lag of about one year. In the 1930s this series, distinguished by its item and weighting regimen, came to be known as the 'A' series.

In this first Labour Report, the indexes were labelled 'Cost of Living in...'. This may have led to some confusion. Later Labour Reports were to point out, perhaps a little too obliquely, that a properly selected set of items would, in normal circumstances, measure price variations that would approximate variations in the cost of living. But it was never intended that the index would be a 'cost of living' index.

The Retail Price Index was only ever designed to measure changes in price. Its aim was to measure price changes of an indicative range of representative items rather than cover every purchase made by an average household.

The Federal Arbitration Court becomes interested

From the very first publication of the Retail Price Index in 1912, the Federal Arbitration Court had observed with interest the Bureau's index work. In the Engine-drivers' Case and the Building Labourers' Case in 1913, use of the Retail Price Index was further formalised. Indeed in 1913 the first series was adopted by the Court. From that point on, Bureau price indexes were used in determining relative basic wages throughout Australia, based on the criteria established by the Harvester Case.

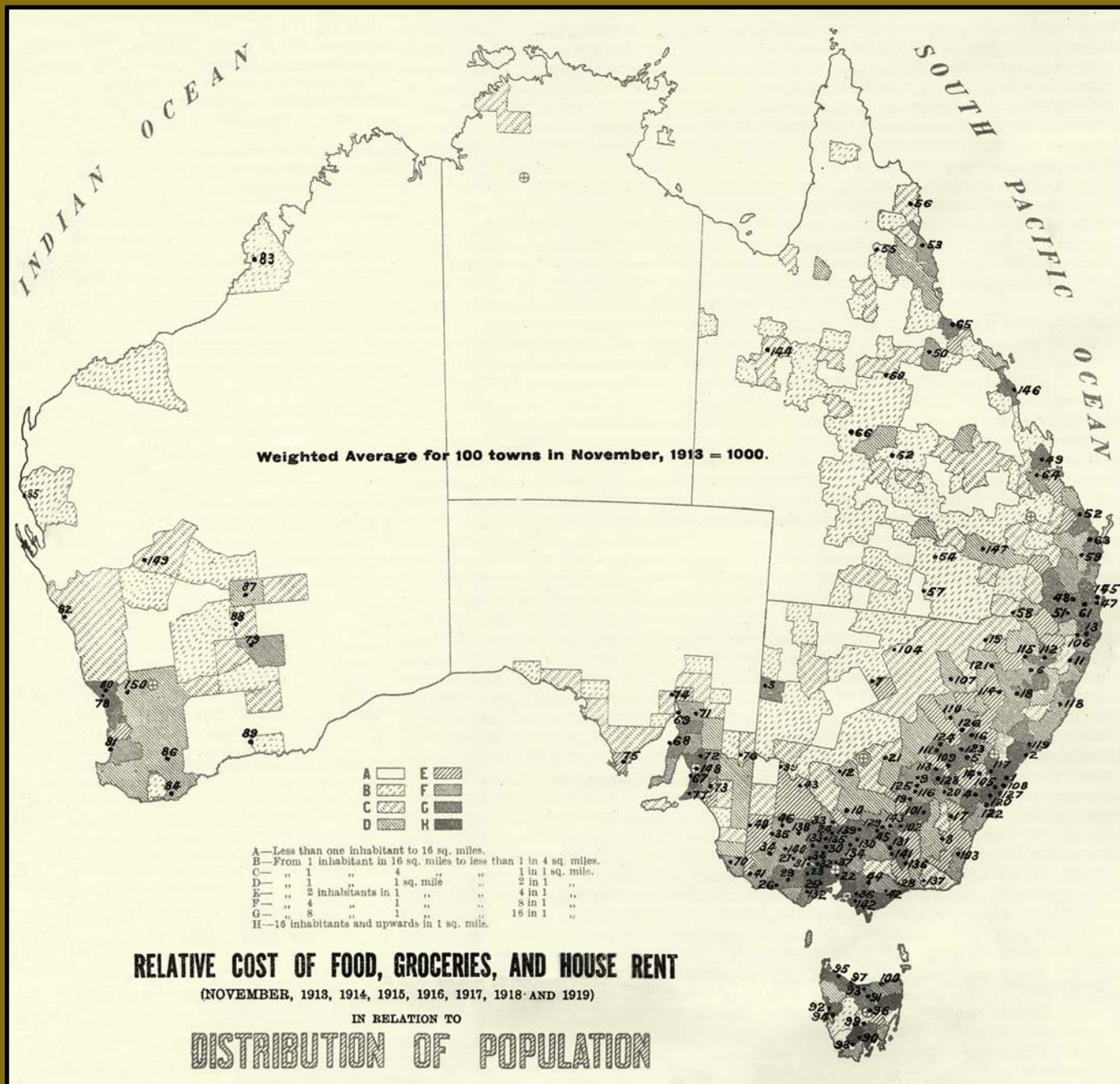
In 1925, in accordance with a resolution of the Conference of Statisticians held in Adelaide in August 1924, the basis for computing rent was amended to include only four and five room houses. The rental component of the index had previously covered rentals of all houses. It was decided that the principle of 'predominant price' should from then on also apply to rent, and the majority of worker households occupied houses of four or five rooms.

From this point, tables previously published using rental data relating to all houses were produced using rental data for four and five room houses. This index was later labelled the 'B' series. However the Bureau continued to publish concurrently the hitherto produced 30 towns tables covering rental for all houses. From 1926 onwards these tables were published in the Quarterly Summary of Statistics, and as appendixes in the Labour Reports. This continuation was specifically for use by the Commonwealth Court of Conciliation and Arbitration. The 'B' series was never used in wage determination.

Cost of living index

A 'cost of living' index measures changes in the cost of living, a concept made up of changes in the price of a given standard of living and changes in the standard of living itself.

Above left: The first Retail Price Index was published in 1912. For the first time Australians could compare the costs of groceries and other key living costs between cities.



Predominant prices

Prices used in retail price indexes needed to satisfy a number of requirements. They needed to reflect the variations in grade and quality in the item being priced, and they needed to be comparable both across states and between different localities within states. It was quickly determined that the necessary price information was not available within existing records, whether in the Commonwealth Bureau or in the state statistical bureaus, nor from newspapers. It was consequently decided to apply directly to retailers.

'In doing so, it was also decided to obtain records of the predominant prices, that is to say, the prices of that grade or quality most frequently sold.'

CBCS, *Prices, Price Indexes and the Cost of Living in Australia*, Labour and Industrial Branch Report No. 1, 1912.



Left: Map of Australia showing relative cost of food, groceries and house rent in relation to distribution of population, first published in CBCS, *Prices, Purchasing-Power-of-Money, Wages, Trade Unions, Unemployment and General Industrial Conditions*, Labour and Industrial Branch Report No. 11, 1920.

Recovering your money's worth



A Mullen Burst Testing machine, patent 1909, used to measure how much pressure could be applied to fabric before it burst. This is still used as a measure of fabric quality.

The Piddington Royal Commission on the Basic Wage

Meanwhile in the early 1920s the government had authorised the implementation, in the Bureau, of the recommendations of the 1920 Royal Commission on the Basic Wage, chaired by Albert Bathurst Piddington, that price index investigations be extended to cover the whole of the ordinary expenditure of a household. This approach was gradually implemented.

By the early 1920s relative consumption of the various commodities had moved considerably from the quantities contained in the original basket. This had not affected the accuracy of the index, simply because all prices had moved in the same direction. However it was felt that this level of consistency could not always be expected.

A new index in construction

In line with recommendations of the Royal Commission, the basket was therefore revised to reflect current consumption. The list of commodities was gradually modernised – some items were dropped and new products added. The series covered food and groceries, rent of four and five roomed houses, clothing (man, wife and three children), household drapery and hardware, fuel and lighting. The weights in the new basket represented the average annual consumption per head in the years 1927 to 1929. This was a change from the total annual consumption used in the first two series, though in practice the relativity between items did not change.

Though compiled first in 1921 and at quarterly intervals from June 1922, the new index was not published in the Labour Report until July 1932. It retained a fixed basket, meaning that items and weights could not be revised in the life of the index. This index later came to be known as the ‘C’ series. Meanwhile, the previous two series continued to be published.

The ‘C’ series was partly adopted by the Federal Court in May 1933 in the form of the ‘D’ series. The ‘D’ series was a combination of the ‘A’ and ‘C’ series used by the courts for reasons of continuity. In April 1934 the ‘C’ series was fully adopted for most court purposes although the ‘D’ series continued to be used in a few specific industries.

And some new names...

In *Labour Report No. 24, 1933* published in 1935, the new system of series labels was introduced. Prior to that, they had all been known by their rather lengthy titles.

Following recommendations by the Conference of Statisticians of April 1936, the ‘C’ series was extensively revised, with both the items and their relative quantities in the basket updated to reflect the consumption of the time. At the same time definite grades or qualities were established, to improve consistency in collection across the country, and rental collection and weighting methods were improved.

‘The retail price index was a bloody mess and that’s praising it up. When I started looking at some of the retailers’ returns, [for] one of the items – I’m just giving an example – a pair of curtains, we were supposed to get returns from every state from a selected number of retailers, the price of a pair of curtains otherwise undefined. When I looked at it I found the prices varied in one state from 6/11d to 96/11d. There might be three or four quotes that were solemnly averaged and that was the price of a pair of curtains.’

Sir Roland Wilson interviewed in 1984.

The 'Court' series

Throughout the first half of the century, the Commonwealth Statistician was regularly called before the court to explain and in some cases justify the choice of items and weights in the basket. It was possibly sensitivity to the political nature of these appearances that led Giblin to state that the index 'was not designed with special reference to wage regulation, nor has it been altered at any time with that in view' (LF Giblin, *Wages and Prices*, 1931). Sir Roland Wilson tired of court related interruptions and decided to find a way to reduce the pressure on the Bureau.

'So I had to go down [to the Arbitration Court] once or twice and give evidence at how we arrived at our figures and how far they were good, bad or indifferent. In fact I invented a silly little device to get out of the firing line on some of that stuff... I... invented something I called the 'Court' series and told the court they could have the court series constructed however they chose. Of course they continued to choose the 'C' series which was the pale imitation. The wages were then adjusted, not on the Commonwealth Statistician's 'C' series but on the "Court" series, so if the parties didn't like it they knew where to take their argument, not to me, but the court. I don't think it deceived anybody, but it did help to keep the Statistician out of controversy.'

Sir Roland Wilson interviewed in 1984.

In 1937, the 'Court' index was introduced by the Commonwealth Court of Conciliation and Arbitration for use in automatic quarterly adjustments of the basic wage. The 'Court' series was very similar to the 'C' series. There had never been any question that the Bureau's indexes would be influenced by the wishes of either side in the ongoing wages debate. But the introduction of the 'Court' series enhanced the perception of the independence of the Bureau and also protected the Bureau from complaints related to wage decisions.

A second 'Court' series was introduced in 1946, and a third in 1950. Use of the 'Court' series was discontinued in 1953.

Court appearances

'When you boil it all down Wilson was really the 'C' series man and Carver who followed on from Wilson was also mad on the court, the Arbitration Court. They used to appear in the box and the counsel for, who ever it was, the trade unions I suppose, would cross-examine them on the adequacy of the index in certain aspects – is this a good enough coverage, is that good enough and so on. They spent most of their time, I would say for sure, on the 'C' series.'

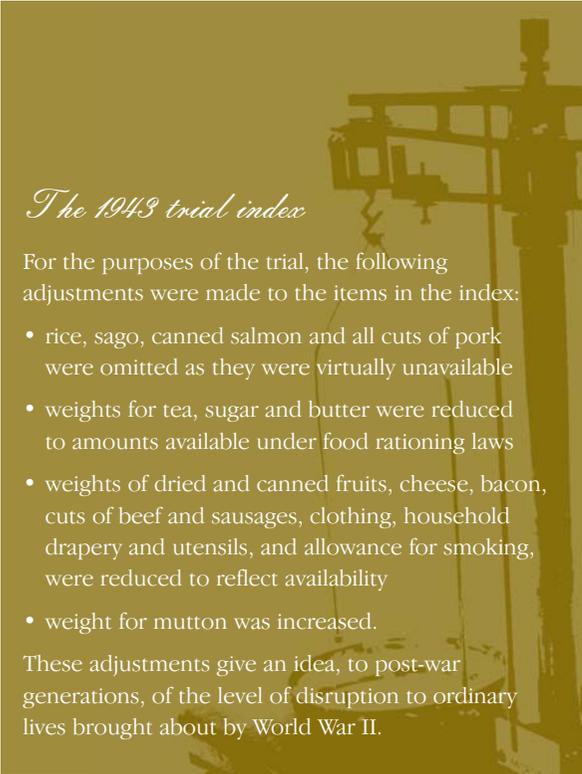
Jack O'Neill interviewed in 1984.

The 'C' series post-war

Spanning the period from 1921 to 1953, the 'C' series came under much scrutiny towards the end of this period. Buying, spending and pricing patterns had been completely disrupted during the period of the Second World War. It is unlikely that any basket could have been continuously representative during the wartime and immediate post-war periods.

But revision of the index posed difficulties – the changes were likely to be extensive and the resulting new series would not be continuously comparable with the pre-war 'C' series, as there would be difficulty in obtaining pre-war prices for any additional items. There was concern to keep alive the possibility of measuring price change on a continuous basis, a feat which had so far been achieved through the first three index series.

In 1943, a trial index, constructed for testing purposes only, using a basket that more closely incorporated wartime spending patterns, showed that the 'C' series continued to be sufficiently reliable in measuring price movements.



The 1943 trial index

For the purposes of the trial, the following adjustments were made to the items in the index:

- rice, sago, canned salmon and all cuts of pork were omitted as they were virtually unavailable
- weights for tea, sugar and butter were reduced to amounts available under food rationing laws
- weights of dried and canned fruits, cheese, bacon, cuts of beef and sausages, clothing, household drapery and utensils, and allowance for smoking, were reduced to reflect availability
- weight for mutton was increased.

These adjustments give an idea, to post-war generations, of the level of disruption to ordinary lives brought about by World War II.

It was therefore decided that it was desirable to continue the 'C' series in its pre-war state to ensure continuity of price movements. It was clearly neither possible nor advisable to revise the index to account for recurrent temporary departures from normal consumption. Small adaptations were consequently set in place, and in 1948 about 100 extra items were added to the 'C' series and the results compared to the regular 'C' series. The net difference was not great. A Bureau submission to the Basic Wage Hearing of 1949–50 mentioned a few difficulties with greater than normal price dispersal, and apparent consumer shifts to products of greater quality than were demanded pre-war, but overall it recommended that the 'C' series continue to be accepted as reasonably reliable.

Black market meat

In the period of controlled prices during World War II, which continued for about five years after the war itself, meat prices had been strictly controlled. So of course the Retail Price Index used the controlled prices. But in the late 1940s and early 1950s it became apparent to field staff, who after all bought meat for themselves and their families, that fixed prices were no longer much used for meat and black market prices were charged instead. The decision was made to try to record real meat prices and two approaches were used. Firstly, some butchers were asked, under conditions of strict confidentiality, to give the actual prices they were charging.

'It was like reporting illegal earnings to the taxman really.'

Secondly, from those butchers who did not wish to cooperate the Bureau purchased meat.

'We bought meat, we weighed it, worked out its actual price, donated it to hospitals or in some cases sold it at the fixed price to some of the people who had bought it. Apart from where we did that to confirm what we knew, we'd take the average prices from the people who were honestly reporting with our own purchase prices ... and when the September quarter 1950 came out I think we put 3 shillings on the basic wage which was probably £5 at that time.'

'The real clincher should have been the government gazettes just about the time I came into it. They were showing contracts for the purchase of meat by government bodies at wholesale prices which were in excess of the ones which the price control law was trying to say existed.'

Frank Stewart interviewed in 1999.

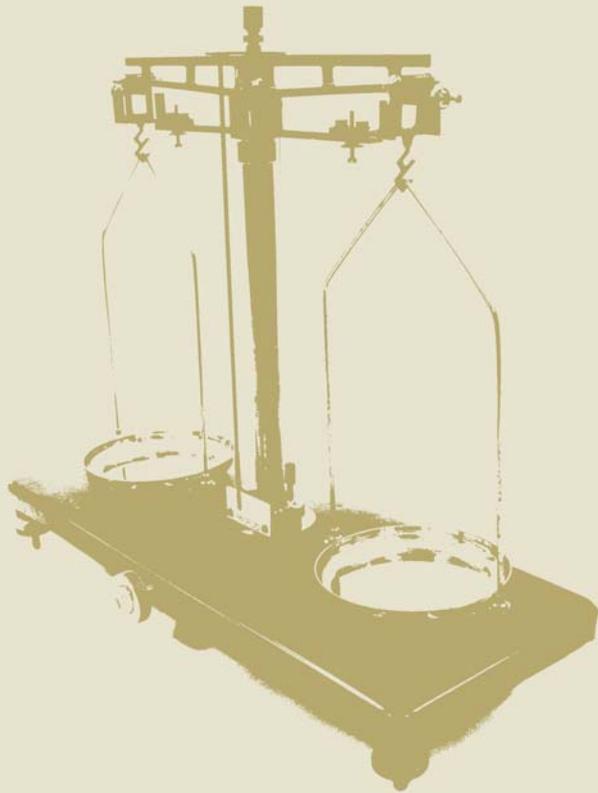
It was expected that consumption patterns would return to normal around the middle of 1949, following the removal of most coupon rationing and price subsidies in late 1948. To this end it was planned to establish a new weighting pattern with which to revise the 'C' series.

However, the following two years saw wide price dispersion and great changes in consumption. Reweighting was again postponed, and new prices collected were used to check the 'C' series to monitor its accuracy in measuring price change.

'The inflation caught up with us just about everywhere, culminating, I think in 1955–56, when potatoes went through the roof and that became a big item. We published an index with prices, total prices, including potatoes and onions, but the employers, of course, wanted to adjust wages based on the index excluding potatoes, which I think at one stage made a difference of about four or five shillings. Poor old Stan Carver went into the state arbitration body and managed to avoid saying which one you should use to adjust wages. He wasn't going to buy into that. He put it that that's for the Arbitration Commission to decide ...'

'There was one of my staff who attended the hearing and heard the two lawyers on the opposite sides walking away from us. One said, "What I can't understand is why you don't ask the Statistician direct which one he should use?" The bloke said, "We might get the wrong answer". He then said, "Why doesn't the other side?" Reply, "Same reason".'

Frank Stewart interviewed in 1999.



Wagging the inflationary dog

In 1951, in a letter to Sir Harry Campion, the UK Statistician of the day, Carver wrote:

'It so happens that our retail price index has now developed the role of wagging the inflationary dog.

'This is because Industrial Arbitration awards automatically adjust basic wages (fundamental to all wages and most salaries) each quarter in direct ratio to the rise in the index. In the last two quarters combined the rise has been of the order of 15% or at the rate of 30% per annum. That leaves little to the imagination unless you conclude that all is well, since Australians were born lucky. The second of the adjustments has just been announced. Statistically we are not confronted with a witch trial. It is accepted generally (a) that we have done our job in faithfully producing a reliable index of actual prices and (b) that if anything is to be done about the automatic price index-wage adjustment, approach must be made to the Arbitration Courts.

'But no "party to the proceedings" and no Government seems inclined to open the matter up before the Court. The question in my mind is whether it will become necessary for me to put certain purely statistical issues to the Court. If I find it

necessary, I will certainly do so. But in doing so I would precipitate action on fundamental policy matters beyond the province of a Statistician.

'The hue and cry that has occurred, the statements of the press and of some Price Control people, do create a psychology in which I expect to experience intensified difficulties in getting at actual prices of certain major commodities for December quarter in some main places. My problem is whether to resort to statistical detection in a fairly extreme degree, or to withdraw from the hunt. I think I must do the former and keep the index going as long as it is possible to say that it is reasonably reliable. If I gave up the hunt too readily, I would be deciding a national issue of the most momentous character. Therefore I must exhaust every proper means to continue the index, before abandoning it or so qualifying it to such an extent that it would no longer be used automatically as it has been for 30 years past.'

Sir Stanley Carver in letter to Sir Harry Campion, 'Third Conference of British Commonwealth Statisticians, Canberra 1951'.

In June 1953, Sir Stanley Carver, the Acting Statistician, advised the Conference of Statisticians that due to increasing unreliability of components of the 'C' series index, it was time to substantially reconstruct the 'C' series or produce a new index altogether. Thought began to be given to the construction of a replacement index.

More court appearances

'One thing about Carver, he had a terribly long view, he was very long-headed. He used to prepare cases for the Arbitration Court, and you know, it might be three years before he prepared the next and he could go back to the one he did last time and he'd never have to recant anything that he said, it was always apposite to the next case. And I suppose he knew more about the index than any other man in the world. He was an absolute authority.'

Keith Archer interviewed in 1971.



The Interim Retail Price Index

The Interim Retail Price Index was first published in 1954. It was a transitional index, based on the 'C' series model, but differing in two ways. Firstly the group and item weights reflected consumption patterns of the 1950–1953 period, while those of the 'C' series related to pre-war consumption. Also the new index included a large number of items not covered by the 'C' series. Due to limited staff resources available, and a more complex index, it was decided to produce the Interim Retail Price Index for only each capital city and the six cities combined.

As with previous indexes, once published the Interim Retail Price Index was regarded as the current retail price index of the Bureau, regardless of decisions about its use made by industrial tribunals. The 'C' series continued to be published in its existing form. It was expected that for some time the Interim and 'C' series price movements would show the same trend.

However the fixed weighting used in the Interim Retail Price Index proved unable to keep abreast of the rate of change in consumption patterns throughout the 1950s, and by the end of the decade a new index was under construction.

Changes for a changing world

Though it had been viewed as undesirable to fundamentally change the basis on which the price index was constructed, it became apparent that no single set of fixed weights could adequately represent expenditure across the whole post-war period. Clearly consumption patterns had changed and would continue to change frequently. To solve this problem the new index was compiled as a chain of linked indexes. This allowed frequent changes to be made to weighting proportions and to the list of items. The initial index was compiled in 1960, and included four linked short term indexes beginning in September quarter 1948, and linked at June quarter 1952, June quarter 1956 and March quarter 1960.

For convenience, this new index was given the title 'Consumer Price Index'. However the longer and more technically correct title was 'Consumer Series Retail Price Index Numbers'. It was still designed to be an index of retail prices covering a high proportion of household expenditure and therefore representative of price movements in general. It was not intended to measure changes in standard of living, merely changes in the prices of currently consumed goods and services.

The weighting pattern of the new index was intended to relate to estimated aggregates of the expenditures of all wage earner households, rather than the expenditures of a selected 'average' household. The expanded list of items included home ownership costs, weekly payments for houses let by state housing authorities, household appliances like refrigerators, washing machines and television sets, private motoring, and beer and other additional items. The new weights were derived from analysis of a range of Bureau collections.

CONSUMER PRICE INDEX.		
COMPOSITION AND WEIGHTING PATTERN AS AT MARCH QUARTER, 1960		
FOR THE SIX STATE CAPITAL CITIES COMBINED.		
Group, Section, etc.	Percentage Weight.	
	Section, etc.	Group.
Food—		32.1
Cereal Products—Bread, flour, biscuits, rice, and breakfast foods	4.1	
Dairy Produce—Milk, cheese, butter and eggs	7.5	
Potatoes, Onions, Preserved Fruit and Vegetables—		
Potatoes and onions, canned and dried fruits, and canned vegetables	1.9	
Soft Drink, Ice Cream and Confectionery	4.0	
Other (except Meat)—Sugar, jam, margarine, tea, coffee, baby foods, and sundry canned and other foods	4.2	
Meat—Butcher's (Beef, mutton, lamb and pork)	8.8	
Processed (Bacon, smallgoods and canned meat)	1.6	
CLOTHING AND DRAPERY—		19.0
Men's Clothing	4.5	
Women's Clothing	7.4	
Boys' Clothing	0.6	
Girls' Clothing	0.9	
Piecegoods, etc.—Wool, cotton, and rayon cloth, nursery squares and knitting wool	1.1	
Footwear—Men's, woman's and children's	3.4	
Household Drapery—Bedclothes, towels, tablecloth, etc.	1.1	
HOUSING—		10.7
Rent—Privately owned houses	2.0	
Government owned houses	0.9	
Home Ownership—House price	4.7	
Rates	2.1	
Repairs and Maintenance	1.0	
HOUSEHOLD SUPPLIES AND EQUIPMENT—		13.2
Fuel and Light—Electricity	1.9	
Gas	1.5	
Other (Firewood and kerosene)	0.8	
Household Appliances—Refrigerator, washing machine, stoves, radio set, television set, vacuum cleaner, electric iron, etc.	4.5	
Other Household Articles—		
Floor Coverings	0.5	
Kitchen and Other Utensils, Gardening and Small Tools	1.0	
Household Sundries (Household soaps, etc.)	1.1	
Personal Requisites (Toilet soap, cosmetics, etc.)	1.0	
Proprietary Medicines	0.8	
School Requisites	0.1	
MISCELLANEOUS—		25.0
Transport—Fares—Train	1.6	
Tram and bus	2.8	
Private Motoring—Car purchase	3.0	
Car operation	3.9	
Tobacco and Cigarettes	3.9	
Beer	4.1	
Services—Hairdressing (Haircuts, wave, etc.)	0.9	
Drycleaning	0.5	
Shoe Repairs	0.3	
Postal and Telephone Services	0.8	
Other—Radio and Television operation	1.6	
Cinema Admission	0.6	
Newspapers	1.0	
Total	100.0	100.0

In 1960 the first Consumer Price Index was compiled. This is a page from the 1960 Labour Report showing the items included in the CPI for March 1960.

The fourth series covered the period up to the December quarter 1963, at which point a fifth series was linked in and released from the March quarter 1964. Once again weighting and items were adjusted. For example, frozen vegetables, packet soups and additional processed meat items were introduced. In 1964 a Consumer Price Index was introduced for Canberra.

During the 1970s user consultation was incorporated into the review process. This meant that user needs were taken into consideration as part of the process of constructing each new link in the CPI chain.

The Household Expenditure Survey introduced

In the 1970s the Bureau began a Household Expenditure Survey (HES), which provided the ideal source of weighting data. CPI weights were based on the 1974–75 HES for the 9th series, released for December quarter 1976. From this time, successive Household Expenditure Surveys formed the basis of weighting for successive CPI series. Use of HES data meant that the 'CPI population' could be targeted, and allowed separate weights to be calculated for each capital city.

For the 10th series CPI, released for June 1982, coverage was expanded to include a full CPI for Darwin. At the same time certain items were added: holiday travel and overseas accommodation, education fees, child care fees and pharmaceutical prescriptions. As no new HES data were available, weights were once again based on a combination of Bureau collections.

Interest charges included

The 11th series CPI, released for March 1987, used weights based on the 1984 HES. Under the guidance of Statistician Ian Castles and with his personal approval, this series contained two changes which were regarded variously as small alterations or fundamental shifts in the thinking behind the CPI, and which prompted much media debate. The expenditure class 'House purchase, including alterations', in the home ownership sub-group, was replaced by the new expenditure class 'Mortgage interest charges'. This change was the result of very detailed consultation and analysis. The decision was eventually based on the rationale that mortgage interest charges represent a significant proportion of home ownership costs, and variations therefore have a significant effect on the purchasing power of household incomes. A new expenditure class for consumer credit charges was also introduced. These changes meant that interest charges paid by consumers were now taken into account in determining the CPI. Given the high interest rates in the late 1980s this was always going to be controversial.

The scope of the CPI remained the same – metropolitan households obtaining most of their income from wages and salaries, excluding the top 10%.

For most of its history, the CPI had been calculated by hand. This was a laborious and time consuming process which in December 1990 was replaced by a mainframe computer system.

The 12th series was released for the June quarter 1992.



A review in the 1990s resulted in the CPI changing from a measure of living costs of employee households to a general measure of price inflation for the household sector as a whole.

A rethink of scope and purpose

The 13th series was introduced for the September quarter 1998. This release followed a very large scale review, under the guidance of statistician Bill McLennan, which aimed not just to adjust weighting and items, but to revisit the purpose and scope of the index at the conceptual level. In reviewing the CPI, the Bureau consulted a broad range of users. The decision was driven by many factors including the changing nature of wage determination and the increasing prevalence of enterprise agreements, replacing the use of court based decisions. The introduction in 1993, by the Reserve Bank, of target measures of inflation as a monetary policy strategy, placed greater importance on the need for a good measure of inflation. Added to this was the concern at the counter-cyclical volatility caused by the influence of changing interest rates on mortgage interest charges and consumer credit charges within the index.

This review resulted in the CPI changing from a measure of living costs of employee households to a general measure of price inflation for the household sector as a whole. The Bureau changed the approach used in constructing the index, and moved to a weighting pattern representative of all private households in the eight capital cities. This change took the population coverage of the CPI from 29% to 64% of Australian private households.

As a consequence, the review process for the 13th series also saw the removal of mortgage interest charges and consumer credit charges, and the inclusion of expenditure on new dwellings (excluding land). It also included new items of significant expenditure such as home computers and software, domestic services (house cleaning, gardening and the like) and tertiary education fees.

Cost of living measures were still produced, compiled on an annual basis, for the use of those with this focus. Because mortgage interest rates have been reasonably stable over this period, there has been little difference in the movements of the CPI and the cost of living measures.

The 14th series CPI was introduced in the September quarter 2000. The purpose of this review was primarily to address the wide-ranging implications for the CPI of the New Tax System, incorporating the introduction of the Goods and Services Tax (GST) and the removal of the wholesale sales tax and some state and territory taxes.

The Bureau also compiled an experimental constant tax rate measure, designed to abstract from the direct or first round effects of changes in tax rates on the prices of consumer goods and services.

Over the Bureau's ninety or so years of measuring price change, Bureau practice has constantly evolved, incorporating new index theories, new items and changed consumption patterns, but maintaining relevance, representativeness and, above all, accuracy.

Changing consumption over the century

Analysis of the items covered by each Retail Price Index can provide very interesting insights into the daily lives of family members in average Australian households, at different times throughout the last century.

Some of the growth in items included in the various price indexes is due to improved collection techniques and further development of index theory and methodology. However much is due to changes in goods available to consumers. As candles went out in the 1930s, electric globes came in. There was a large increase in availability and consumption of electrical labour saving devices in the 1950s and 1960s. More processed food can be seen trickling into the regimen throughout the century.

The first index, released in 1912, contained only 46 items. Among these were:

bread	sago	blue
flour (ordinary)	jam	candles
tea	oatmeal	soap
coffee	raisins	potatoes
sugar	currants	onions
rice	starch	kerosene

Throughout the period covered by the 'C' series price index (1921 – 1953), the pace of life in an average household changed only slowly. Though technological advances, for example, were starting to flow into products which would eventually revolutionise the lives of workers and householders, in the early part of the 20th century these were yet to have a huge impact.

The 1933 'C' series regimen saw the introduction of self raising flour, golden syrup, dried apricots, canned peaches, canned pears and tinned salmon. By 1936,

newspapers, electric globes and electric irons had entered the regimen.

The sequence of adverse events: the Depression, WWII and then the extension of commodity rationing throughout most of the 1940s, all helped to further dampen the pace of change. But between 1950 and 1960, far reaching changes emerged in household consumption patterns:

'In this period home owning largely replaced house renting, the numbers of government-owned rented houses increased appreciably, the use of the motor car greatly increased and partly replaced use of public transport, various items of electrical household equipment and television came into widespread use, household consumption of electricity greatly increased, and technological developments such as the introduction of new synthetic materials produced a number of changes in clothing and other groups of items.'

CBCS, Year Book No. 47, 1961.

The Interim Retail Price Index, introduced in 1953, was based on the 'C' series price index but with post-war consumption weights. New items included:

soft drink	soap powder	boiler
chocolate	razor blades	electric toaster
ice-cream	toothpaste	electric jug
canned	baby food	lawn mower
baked beans	antiseptic	hairdressing
spaghetti	cough mixture	dry-cleaning
margarine	pressure cooker	cinema tickets
tomato sauce	fry pan	radio licences

The Interim Retail Index quickly became outmoded as it failed to adequately reflect the continuing changes in consumption and price. Analysis of new data started to show that 'no single list of items and no single set of weights' were going to be consistently representative over time in the post-war world. Year Book No. 47, 1961.

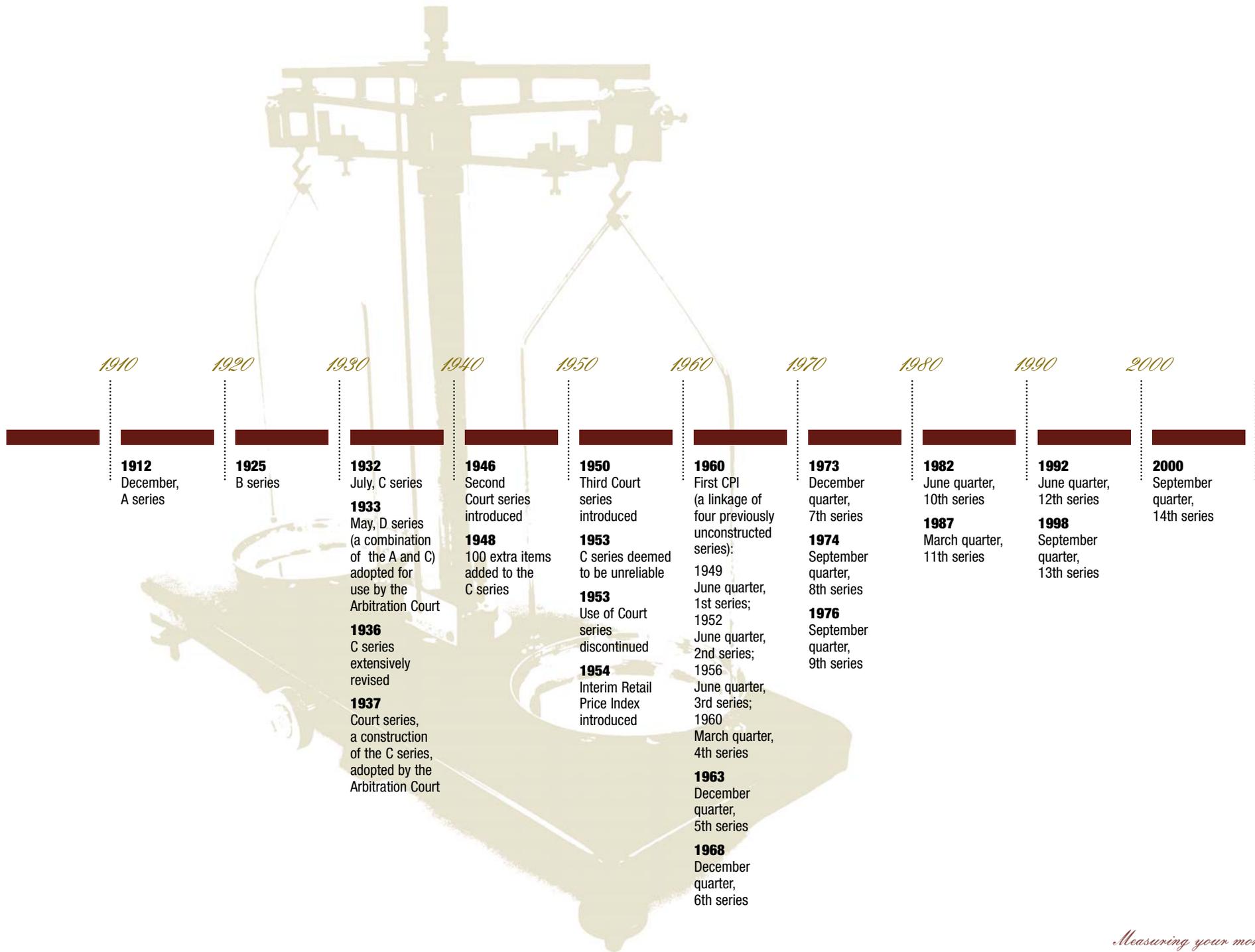
The first Consumer Price Index, released in 1960, included:

beer	hair creams	washing machines
canned herrings	sanitary napkins	vacuum cleaners
canned soup	home ownership	radios
deodorant	car maintenance	television sets
lipstick	refrigerators	stoves

Rapid changes in Australian society in the 1970s and 1980s were reflected in the CPI with the addition of a variety of consumer items such as:

- Takeaway food, wine and spirits (1974)
- Holidays, restaurants, fruit and vegetables, fish, insurance, books, toys, and sports equipment (1976)
- Prescriptions, education and childcare fees (1982)
- Glasses, watches, and veterinary fees (1987).

Throughout the twentieth century, the Bureau's price indexes were regularly amended to reflect the lifestyle changes experienced by ordinary Australians.





Right: Publicity shot taken for the Census showing a family filling in their census form.

Far right: Detail of a Madas Calculating Machine patented in 1913, which was used in the Bureau.

The big count
THE CENSUS OF POPULATION AND HOUSING

chapter five



Role of the census

Population estimates based on a census are vital in determining the population size of each state and territory, and equitable boundaries for electoral districts. The Commonwealth Constitution stipulates that states' representation in the House of Representatives should be based on equitably sized electoral districts. In this way the census is central to the practical application of democracy.

If the census were only to count the population we would need little more than a head count (not dissimilar to the musters used in the early days of the colonies). From before Federation, a census was seen as crucial not only to democracy but also to good government. The census was a key source of information available to the Commonwealth government and the state governments to determine the progress of the nation and to support policy development.

'The Census gives us not only a vivid photograph of the present, but with past censuses, shows also the direction in which we are travelling and the rate of progress we are making ...'

CBCS, The First Commonwealth Census, 3rd April 1911, Notes by G.H. Knibbs, 1911.

The census has also been a major element in determining the allocation of federal funding to the states and territories as it is a key input into the population estimates used for this purpose. The Commonwealth Grants Commission has also used, since at least the 1970s, detailed census data along with other statistical collections to calculate the factors which determine the relative distributions of that funding.

'It is the most important source of statistical information in the country ... Without the statistical and other benefits of the census, planning and decision making affecting the lives and welfare of all Australians would be based on inadequate and incomplete data, resulting in many instances in a high level of waste and inefficiency in the allocation of material and human resources.'

Law Reform Commission, Privacy and the Census, Report No.12, 1979.

Today the census is just as important, despite the advent of household surveys which can examine more topics in greater detail than a census can (a census is limited in the number of questions that can be devoted to any topic). The limitation of sample surveys is that they are unable to provide quality information about small population groups, nor about small geographic areas, because of the influence of sample errors. Over the past 100 years, the census has become more accurate and the published results have become more timely, adding the relevance of the census in this new century.



Promotional photo from the 1960s depicting Ken Wigham as a census collector explaining the census form to a family.

From colonial musters to an integrated census

Australia has a history of regular population stocktakes from the time of the first British settlement. From 1788, stocktakes occurred in the form of victualling lists, which were maintained for the purpose of controlling the food stores for all members of the colony. Musters were held regularly from 1795 to 1825. In 1828 the first regular Australian census was held in New South Wales (at this time it included the settlement at Moreton Bay). From then, regular censuses were held in New South Wales and, as they were established, the other colonies also held regular censuses.

By the late 1800s the censuses held in the colonies were taken on the same day as the census in the United Kingdom and other parts of the British Empire.

'... That it is desirable that a Census be taken simultaneously in all colonies at least once in ten years, and on the same day as the Imperial Census; and that the schedules and compilation should in all essential details be in accord with the systems adopted in the United Kingdom.'

Report of the Conference of Government Statistics, January 1875.

The breadth of topics covered had grown considerably. In 1891 the subjects of enquiry were: name, sex, age, religion, occupation, conjugal condition, education, sickness and infirmity, materials of house, number of rooms, and number of each description of livestock. The education topic included questions on whether people could read and write as well as any university qualifications. Chinese and Indigenous Australians

were tabulated separately so that it was possible to '... combine their numbers, therewith or separate them there from, as may be desired'.

Quality was also an important issue from early on. However the Victorian Statist in 1881 was a particularly brave man. He was so confident of the ability of his collection system to bring in a good tally that he offered a 10 shillings reward (more than an average daily wage at that time) to anyone who could prove that his or her house had been missed. He finally paid rewards to 81 people and commented that for the expense of 40 pounds, 10 shillings 'the government and the country were placed in possession of the strongest presumptive evidence that the Census had been properly taken'.

Already by the mid 1800s the various colonial statisticians were arranging conferences to try to establish compatibility between the colonies in their respective censuses. By the time they were planning for the 1901 census, at a conference in March 1900, it was clear that there would be federation between at least some of the colonies, so there was a concerted attempt to make the 1901 census fully compatible between colonies. New South Wales, Victoria, Queensland, South Australia, Western Australia, Tasmania and New Zealand attended the conference.

'These resolutions ... form the basis of the model schedule ... and, if strictly adhered to, will ensure the possibility of exact comparison being drawn of the conditions of the various colonies. The members of the Conference have pledged

themselves to adhere, so far as it may be in their power, to these resolutions. They consider uniformity is especially desirable at the present time, when five of the colonies are about to enter upon a federation, as there is every probability that the figures obtained in the coming Census will form the first population statistics of the Commonwealth, and be the basis of many important arrangements in regard to finance and electoral representation.'

Report of the Conference of Statisticians, March 1900.

Unfortunately the attempt was more concerted in some colonies than others, so it was not entirely successful.

'Although uniformity in the form of the schedule was attained, minor differences arose as to the interpretation of terms. It should be noted also that the method of presentation of the results differed considerably in the several colonies, that the results of all the inquiries were not tabulated for all the states, and that there was no coordinating authority to bring the results together so as to form a total for Australia ...'

CBCS, *Census taking in Australia*, in Census 1911 Volume III.

More information on the development of the census prior to Federation may be found in Cameron and Hazlehurst, 'Australian statisticians and the development of official statistics', in *Year Book Australia*, 1988.

Indigenous Australians and the census

The Constitution of Australia specified that:

'In reckoning the numbers of the people of the Commonwealth or of a State or other part of the Commonwealth, aboriginal natives shall not be counted.'

Commonwealth of Australia Constitution Act 1900 (UK) Section 127 (repealed in 1967 by the Constitution Alteration (Aboriginals) Act 1967).

At the time Torres Strait Islanders were not recognised as a separate group indigenous to Australia.

The Bureau received advice from the Attorney-General's Department as to exactly who was an 'aboriginal native'. On the basis of this advice the Bureau asked all Indigenous people found during the collection process to complete the census, including a question on the proportion of their Aboriginal heritage. If people stated that they were more than 'half Aboriginal' in heritage they were excluded from the published census results. So in theory the Bureau included all Indigenous people in the first seven census collections, but then excluded them from the published results. The reality was that many Indigenous people, particularly those living in remote areas of Australia, were not picked up in the censuses.

During the 1930s and 1940s the Queensland government successfully lobbied for Torres Strait Islander people to be included in the census as the Census and Statistics Act did not specifically identify them for exclusion. From the 1947 census until 1966 Torres Strait Islander people were included in the census population figures if they were found and identified. In 1947 they were added to the Polynesian group of non-Europeans in the 'race' analysis and so were not separately identifiable. In 1954 and 1961 they were listed as a subset of Pacific Islanders in the Bureau's 'race' analysis, and in 1966 they were a separately listed non-European group. Prior to 1947 Torres Strait Islanders were considered Aboriginal people and so were not counted as part of the published Australian population.

During the 1960s the issue of Indigenous rights began to gain a higher profile, including their exclusion from the census counts. In 1967 the relevant section of the Constitution was repealed and the Bureau found itself with the large task of attempting to provide an accurate count of Indigenous people in the census. The censuses of the 1970s featured various efforts to find all Indigenous people in remote locations. By the end of the 1980s it was expected that the proportion

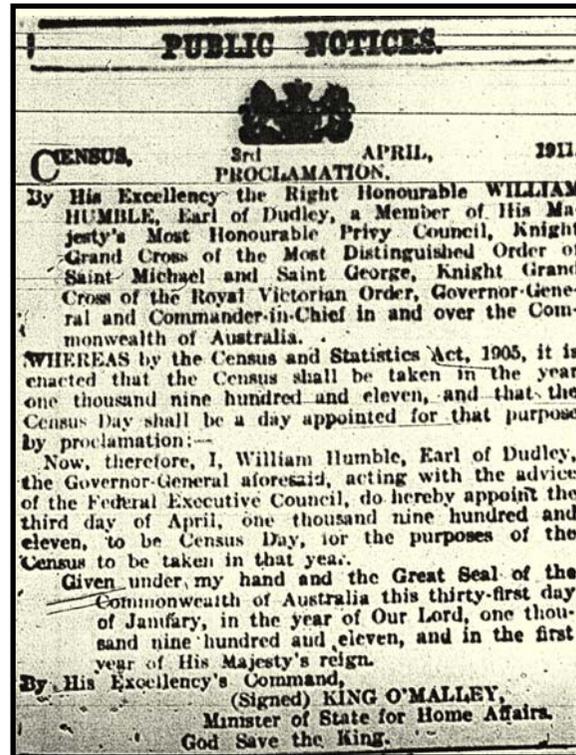


Bill Edwards and Arch Trickett of the Australian Electoral Commission collecting for the census with elders from the Ernabella community in 1966.

of Indigenous people would stabilise as remote locations were satisfactorily enumerated. However the 1991 census produced unexpected results when the proportion of Indigenous people again increased. There was a further, larger increase in 1996. Increasing identification was an important factor. It became clear that identification of Indigenous people was a far more complex issue than merely finding and counting them.

Census beginnings

From the beginning, statisticians in Australia lobbied for five yearly censuses. However the *Census and Statistics Act 1905* (Cwlth) enshrined decennial censuses. Twice in the first half of the 20th century the decennial census date was further delayed by major events (the Great Depression and World War II). There were only four Commonwealth censuses in the first half of the 20th century, compared with nine in the second half.



Census proclamation for the first Commonwealth census in 1911.

The first national census

1911 CENSUS

The first national census was taken in Australia at midnight between 2nd and 3rd April 1911. This was in line with the census in the United Kingdom and other parts of the British Empire. Preparations for the first national census included a census conference in May 1910 in Melbourne. To supervise the census arrangements in the states, one person in each state (the State Statistician in most states) was appointed as a Commonwealth officer for the duration of the census preparation. Also before the first census could be undertaken, amendments were needed to the provisions included in the Census and Statistics Act only five years earlier.

In the 1911 census two small cards were used, a household card and a personal card, instead of the single large schedule used previously in state based censuses. The cards allowed for greater privacy in large dwelling establishments as people filling in their personal details could not read the details of those who had completed the form earlier. It was also thought that the use of cards would make tabulations easier as the information would not need to be transcribed onto cards before it was sorted. The two forms approach was dropped for the 1933 and later censuses as it seemed to cause more work in the collection phase.

Around 7300 collectors and enumerators were appointed for the collection work on the first census. Collectors were mainly on foot, or used horses to cover their areas. Some collectors also used bicycles. While they were paid more if they used a bicycle or horse, collectors had to cover any costs for their chosen means of transport (such as fodder for the horses). Most collectors were able to undertake their work in the specified time with no major difficulties. However flooding and bogs stranded some

collectors in Queensland, while a drought in Western Australia meant that some were unable to find feed for their horses. Police were asked to undertake some of the collection in remote areas in several states, and in all states the police provided details of tramps and campers.

Some thought went into preparing the population for the census. Notices were placed in many newspapers to ensure that the bulk of the population were aware of the upcoming census. Notices were also placed in Chinese newspapers to ensure that the Chinese community was aware of the census. In the cities translators were employed.

In 1911 there were still concerns about the level of adult literacy and its possible impact on completion of the census. It was arranged that the state education departments would give lessons to older school children on how to fill in the census forms. The Bureau arranged for booklets to go out to teachers to explain the details of the census. These steps were taken to assist families where the parents were unable to read and write.

The first Commonwealth census was tabulated in Melbourne. However the space was not large enough to accommodate all the required staff, so it was carried out in two shifts, one starting at 7.45 am and the other at 3.30 pm. Tabulation was done almost entirely by hand. Staff were required to sort over four million cards by hand and physically count them for each tabulation. The Commonwealth Statistician (Knibbs) had undertaken a major European trip in 1910 to investigate census sorting and tabulating machinery used in other countries, but it was decided not to use such machinery in the first national census. The main reason given was that the extra time spent punching special cards for the tabulating machines would delay the results. Also Knibbs was concerned that most of the machinery he saw was still



at an experimental stage and would have required considerable modifications to be suitable for Australia. However, Burroughs' Adding Machines were used for tabulations by locality and a Millionaire calculating machine was also used. Unlike other adding machines of the period, the Millionaire could do multiplication. The Millionaire involved relatively new technology and this machine was one of only a couple of thousand in the world at that time.

Above: The Millionaire calculating machine.

The Millionaire (millionaire) was a mechanical calculator. It was originally invented in Switzerland in 1892 at a time when most calculating machines could only add and subtract. This machine was designed to do multiplication and division as well as addition and subtraction. It was the first multiplication machine that could multiply directly without having to enter successive additions.

Census data: the breakthrough in linking rubella and deaf-mutism

The results of the 1911 census found a curious pattern in the data on deaf-mutism; the condition was found to be particularly high in 10–14 year olds in that year. The Statistician's Report for that census spent some time attempting to explain this apparent anomaly in the data and put it down to this being the age at which those who were deaf-mute would be in schools and would therefore probably be recorded as such by administrators of independent schools. It was thought that some families might have declined to describe a younger family member as deaf-mute.

In 1921 the pattern still existed for the same cohort, now 20–24 years olds. This time the author of the Statistician's Report recognised that there was likely to be a medical reason for this pattern, although he was unable to pick the culprit.

'The age incidence of deaf-mutism varies in such a manner that it is apparent that the cause of the disability is of variable

intensity, and there is some evidence to indicate that the increase in incidence of deaf-mutism at certain ages synchronises with the occurrence of epidemic diseases such as scarlet fever, diphtheria, measles, and whooping cough ... It is a reasonable assumption, therefore, that the abnormal number of deaf-mutes registered at the census of 1911 in the age group 10–14, and in 1921, in group 20–24, was the result of the extensive epidemic of infectious diseases which occurred soon after many in those age groups were born.'

CBCS, Census of the Commonwealth of Australia, 4th April 1921, Statistician's Report.

The last time deaf-mutism was collected in the census was in 1933, and the Statistician's Report repeated the conclusions reached in 1921.

During World War II an Australian ophthalmologist, Sir Norman McAllister Gregg, discovered that a sizeable number of children around the same age appeared to have congenital cataracts. He overheard two mothers in his surgery discussing how they both had had rubella during their pregnancy, and began to look into whether rubella in a pregnant woman had an impact on the unborn child. His work inspired Australian statistician Oliver Lancaster to investigate the census results from 1911, 1921 and 1933. Lancaster found that there was a peak in the level of deaf-mutism in the age cohort born in 1898 and 1899 and that this matched with a known outbreak of rubella in those years. This was the first time in the world that the link between rubella and congenital problems for unborn children was firmly established.

The census personal card comprised 14 questions for the householder, and the household card a further five. Particulars collected included name, sex, date of birth, marital status, current marriage date, number of children, relationship to head of household, blindness and deaf-mutism, birthplace, nationality and race, length of residence in the Commonwealth, religion, education, occupation, type of building, building materials, number of rooms, and owner/renter status. A common error in filling in the forms was that members of the household

who had been dead for some years were often recorded on the household form (because they had been household members), but of course they did not have a personal card. This caused much confusion for collectors.

The 1911 census also attempted to measure attainment of university qualifications. Unfortunately the data quality was so poor that the information was never tabulated or released. It took until 1966 before another attempt was made to obtain any educational attainment information from the census.

'Not only were there many cases in which known holders of degrees had failed to furnish the desired information, apparently through failure to carefully read the instructions, but there were many cases in which existing and non-existent degrees of existing and non-existent Universities were recorded as possessed by persons whose acquaintance with a University must have been a negligible quantity.'

CBCS, Census of the Commonwealth of Australia, taken for the night between the 2nd and 3rd April 1911, Statistician's Report, 1917.





Temporary staff of the Commonwealth Bureau of Census and Statistics employed to tabulate the 1911 census. They were employed in Melbourne from August 1911 to 30 June 1912, but retrenchments started from March 1912.

Results from the 1911 census took a long time to release, and this was further exacerbated by World War I. Three volumes of results were planned. Volumes II and III were released in September 1914, but Volume I (which included the Statistician's Report) was not released until 1917.

'The disorganisation of the duties which resulted from the war and the work involved in the taking of the war census of 1915 were, however, so great that it has been found impracticable to complete the volume until now.'

CBCS, *Census of the Commonwealth of Australia, taken for the night between the 2nd and 3rd April 1911, Statistician's Report*, 1917. Preface.

Second time around

1921 CENSUS

The second national census was held at midnight between 3 and 4 April 1921. The content of the census was similar to the first, but 'cause of unemployment' was added to the schedule for 1921.

For this census, staff of the Electoral Branch were used in all states to collect and distribute the census forms. This followed from a recommendation by the Victorian Supervisor of the 1911 census (the Victorian Statistician at the time) who had used electoral officers for the collection of the 1911 census in Victoria and found that they had the best knowledge of specific areas of the state. At this time the Statistician's Branch and the Electoral Branch were both part of the Department for Home and Territories, making such a plan relatively easy to organise.

Like the previous census, the collection in 1921 was impacted by droughts, floods, cyclones and strikes, but it was still completed on time.

The 1921 census was tabulated using automatic machine tabulation equipment for the first time. Hollerith machinery was hired from England for this purpose.

Some data from the 1921 census were released in bulletins from November 1921 (seven months after the census date). The first was a count of the population of the states and territories. However the Statistician's Report, a full summary and analysis of the census, was not released until 1927. One of the more significant findings from the 1921 census was the low rate of males to females in the 20–30 year age group, showing the impact of the Great War on the population.

Paradise Lost

*My happy home, one week ago, my bungalow, 'The Nest',
was bounded north by Paradise, the place of perfect rest.
Now all is gloom where gaiety and merriment erst reigned,
relations with my better half are most distinctly strained.
On Sunday night, I gaily took my fountain pen in hand,
and started to enumerate for Knibbs our little band.
At question 1, I paused, and to my lady nicely said:
'At last I get a chance to write myself down as The Head'.
No better wife than mine has shared the lot of mortal man,*

*she is a perfect helpmate, in accordance with the plan;
but on one point that gentle dame I've never dared to cross;
she has been, ever since we wed, undoubtedly 'The Boss'.
And when I wrote that I 'John Smith, Bricklayer', was the head,
what bit me hard was what she looked – for not a word she said.
Her name is Marian, she says, but as an honest man,
I wrote it from the record of her birth as 'Mary Anne'.
She looked her wrath – a wiser man had better known his mate.
I wrote her age – per record still – 'next birthday 48'.*

*Then Marian broke loose, and said unpleasant things to me.
I told her all the questions must be answered truthfully.
Her speech was brief, and to the point. She rose and left the room.
Our happy home is now about as joyous as a tomb.
We do not speak, as we pass by. At least, she will not speak,
and this condition will endure for all the wretched week,
because I did as Knibbs decreed and, acting in good sooth,
wrote for him 'confidentially', some brief domestic truth.
– JD*

Reproduced from *Smith's Weekly*, 9 April 1921, p. 18.

A census for the Great Depression

1933 CENSUS

The next Australian census was supposed to have been held in 1931, but by 1930 it was clear that Australia was in a major depression, and it was decided to delay the census. This required the government of the day to put through a change to the Census and Statistics Act which had originally stated that a census should be taken '... in the year one thousand nine hundred and eleven and in every tenth year thereafter'. In 1930 the Act was amended by the addition of the words '... or at such other time as is prescribed'.

In the end the urgent need for information about the impact of the Depression, as well as the realisation that the census was big enough to stimulate some economic activity by providing employment and business opportunities, resulted in the government giving the go-ahead for a census in 1933.

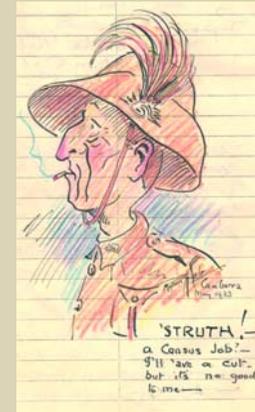
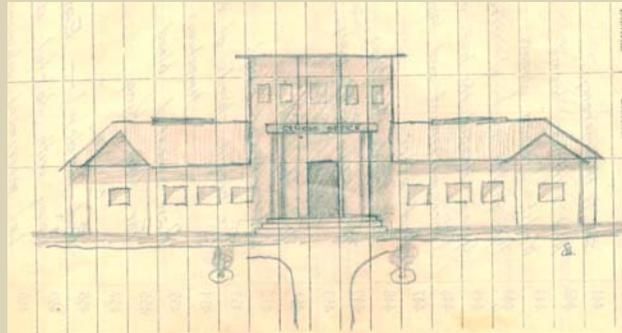
'The Census of 30th June 1933, was taken when the shadow of the severest economic depression in the history of Australia was still over the country. Severe depression had prevailed for about 3½ years prior to the date of the Census, a period of economic difficulty sufficiently long to produce unusual features in the social and demographic structure of the country.'

CBCS, *Census of the Commonwealth of Australia, 30 June 1933, Statistician's Report*, 1940, Preface.

One of the by-products of taking a census was the updating of detailed maps of all areas of Australia. Despite the area covered by the census being basically the same as in previous censuses (with the addition of the island of Nauru for the 1933 census), maps for all of Australia needed to be up-to-date. For the 1933 census, the compilation of maps took around nine months and employed 60 survey draftsmen. The Department of the Interior recruited from men around Australia, but they were employed in the Census Office in Canberra. The Jolimont building (which had been relocated to Canberra from Melbourne) was designated as the Census Office. The census maps were based on electoral boundary maps initially, and then supplemented with other maps from various state departments and other sources. Once the main maps had been drawn up they were sent to enumerators to take advantage of their local knowledge so that they could be divided into collectors' districts. The maps were then returned for checking and copying. In addition, a separate diagram was prepared of every collector's district, including a typed description of the boundaries of the area. These diagrams were pasted into the first page of each collector's record book. There were 11 000 of these diagrams prepared. This process remained essentially unchanged in its key features until the 1996 Census.



Some of the temporary staff for the 1933 census, posed outside the Jolimont Building in Civic (also known as the Census Office).



Foreword

*In this District are many worthy men
Some skilful at checking - others with the pen
Some at stamping are also quite expert
And so are the Mounters - ask Archie or Bert.*

*They came from many places both near & far,
From Sydneys fair city & windy Canberra,
From Brisbane & Hobart & stately Adelaide,
And Melbourne on the Yarra - they're all in the Big Parade.*

*But no matter where they came from
Or their skill at work or play
It has been a pleasure to meet them all
And work with them day by day.*

*And now the job is finished
And I return to my home town again
This book will always remind me
Of the chaps who were "dinkie-die" men.*

The Collector.

The collector's book

In 1932, Walter Williamson, aged 32 years and married with a young family, was offered a job working as a draftsman for the 1933 census. Out of work, he was glad to have the opportunity of a good job, even for six months. He and his family moved from Sydney to Canberra and lived in a small government house at the base of Mt Ainslie. Walter and around 60 other men worked in the Census Office in Civic drafting the 11 000 separate diagrams needed for each collector in Australia. The job was finished in early May 1933.

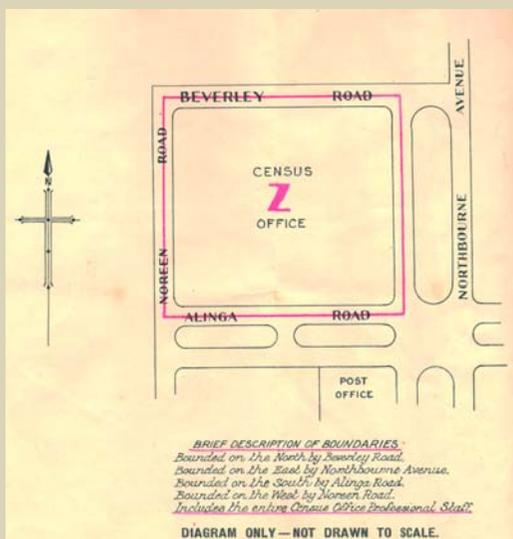
At the end of the job, Walter used a spare collector's record book to collect the contact details of all the men he had worked with. But he didn't just collect their names and addresses. He also copied into the book

limericks about most of the men, a small verse that would act as a reminder of each person and the time that he shared with them. It is not clear who wrote the verses although a number are attributed to others and he may have written some himself. Several of the other men also added larger poems or cartoons to the autograph book.

The Depression and the resulting unemployment had impacted greatly on these men and it is clear from the verses that they were grateful for the opportunity to work on the census maps. A great camaraderie appears to have developed within the group. From the poems we learn that they were not all draftsmen. Some were employed to check the plans, paste the diagrams into the covers of the collectors' record books and even to stamp the front of

the book with the details of the collector's district.

Inside the front cover of the autograph book is what appears to be the usual collector's district diagram. But in this book the diagram is the block on which the Census Office stood. In reality Civic in 1933 was a very sparse area with few buildings or roads. The Census Office in 1933 appears to have been bound on the east and south by Northbourne Avenue and Alinga Street, but the other roads were not yet built (although there may have been tracks). So Walter inserted two roads on the north and west and named them after his two young daughters, Noreen and Beverley.



Above (L to R): Walter Williamson in the 1930s.

A drawing of the Census Office in Walter Williamson's diary from 1933.

One of the drawings in Walter Williamson's census book. Rupert Hale drew the cartoon.

As a foreword, Walter had copied in a poem describing the work and the men.

Diagram of Census Office drawn in the format used for census collector maps in 1933.

For the 1933 census the form was one schedule with the particulars for each individual in a household entered in a list. The new form was very large (triple folded to get it down to the size of a foolscap sheet). Personal slips were still available for those who requested them. There were new questions on industry, orphanhood, foreign languages, war service and income.

Since this was the first census after the Bureau moved to Canberra, it was the first to be tabulated in Canberra. Like the draftsmen, the tabulating staff worked out of the Census Office. Because of the shortage of work at that time, married returned soldiers were employed as coding staff. While around 50 families were able to find accommodation in Queanbeyan, most of the temporary staff had to leave their wives and families behind in their home states to come to work in Canberra, and they were accommodated at the government's expense. Their fares to Canberra were paid by the government, but deducted from their fortnightly wages. At the end of processing, the president of the Census Staff Social and Welfare Committee wrote a letter to the Prime Minister requesting:

'Can you help by issuing warrants to the men as they return to the various States from time to time ... From the wages paid to us, after homes have been maintained in several States and necessary clothing purchased, very little remains to set aside for the inevitable return fare.'

Letter from S Chas Murphy, President, Census Staff Social and Welfare Committee to the Right Hon. JWA Lyons MHR, Prime Minister of the Commonwealth of Australia, 26 January 1934.

The government agreed to cover their return fares.

The Statistician's Report for the 1933 census was not released until seven years after the census. A special feature of this census was the investigation into those with war service in the Great War. The Statistician's discussion of war service found that the number of ex-service personnel was lower than expected and surmised that mortality among returned soldiers was higher than in the general population. The main purpose of this question was to assist war pension administration.

The census for post-war reconstruction

1947 CENSUS

The fourth Commonwealth census was expected to be in the early 1940s, but World War II delayed it. At the end of the war the Bureau began to work towards a new census as quickly as possible. Several of the questions from the 1933 census were dropped, including blindness and deaf-mutism, foreign language, schooling, income and war service. A number of new questions were asked, particularly in relation to the quality and standard of the dwelling. Staff shortages at the Government Printing Office meant that the printing of the forms had to be distributed between the various state government printers.

Roland Wilson, then Commonwealth Statistician, tried to persuade the Prime Minister and Defence Minister to agree to accommodate the processing for the 1947 census at the Fairbairn Aerodrome in Canberra. This fell through as defence officials were less than keen to lend out the base. In the end no suitable site was found in Canberra, and the 1947 census was processed in a single office in Sydney. Hollerith machinery was hired again for

punching, sorting and tabulating the data. The machines used for the census no longer represented the latest technology. The 1947 Statistician's Report commented that:

'Much more complex tabulators are now used for other machine tabulation work carried out in the Bureau of Census and Statistics.'

CBCS, Census of the Commonwealth of Australia, 30th June 1947, Statistician's Report, 1952.

Again the male processing staff received the cost of the fares to return from Sydney to their home towns at the conclusion of their employment by the Bureau.

The 1947 census marked a major change in the Bureau's thinking about employment data items. In the published results it departed from the long tradition of publishing data on 'bread-winners' to embrace the new concept of 'economically active' or labour force. The key difference was that men who were retired on independent means were still previously classified as 'bread-winners', but in 1947 this group was classified as not 'economically active'.

Halfway

1954 CENSUS

The year 1954 was chosen for the census year as a compromise. Normally the next census year would have fallen in 1951, but it was felt that four years between 1947 and 1951 was too short. On the other hand 14 years between 1947 and 1961 was far too long. 1954 fell halfway between the two dates.

For the first time international organisations are mentioned in the Statistician's Report as having some influence on the development of the Australian census. In particular the Statistical Office of the United Nations was commended in relation to the development of uniform standards, definitions and procedures.

'In the formulation of plans for Australian Censuses, local needs are paramount, but every effort is made to bring Australian standards as close as possible to basic international standards.'

CBCS, Census of the Commonwealth of Australia, 30th June 1954, Statistician's Report, 1962.

Before the 1954 census the Bureau tested some of the alternative methods for conducting the census, namely drop off/mail back and full enumeration. However the usual method of drop off/pickup came out as the best method and continues to be the main one used today.

In 1954, for the first time the processing was decentralised, with three processing centres instead of one. Data for the southern states (Victoria, Tasmania and South Australia), as well as Western Australia, were processed in Melbourne. Data for New South Wales and all the territories were processed in Sydney, and data for Queensland in Brisbane. The processing centres took varying times to complete their job, and there was some

The war censuses

During both world wars the Bureau ran collections referred to as 'war censuses'. Unlike normal censuses they were not designed to produce tabulations of confidentialised statistical aggregates. Rather they were registrations of men and of wealth.

They were aimed at two specific purposes, to determine the labour force available to the nation and in particular to industry, and to determine its wealth. These were cheap, expeditious versions of a full census and both were run under the auspices of special legislation rather than the Census and Statistics Act.

The legislation for the war census during World War I was passed in July 1915, and at the time Attorney-General Billy Hughes stated that the government did not intend to use the census for conscription purposes. The initial registration occurred in September 1915. By December 1915 a statutory rule had been passed which added to the registration a form called 'The Defence of Australia and the Empire: the Call to Arms'. This included questions such as 'Are you willing to enlist now?'. If you did not want to enlist at some point then you were asked to state your reasons 'as explicitly as possible'. However in the end there was no conscription in World War I, and Billy Hughes was correct.

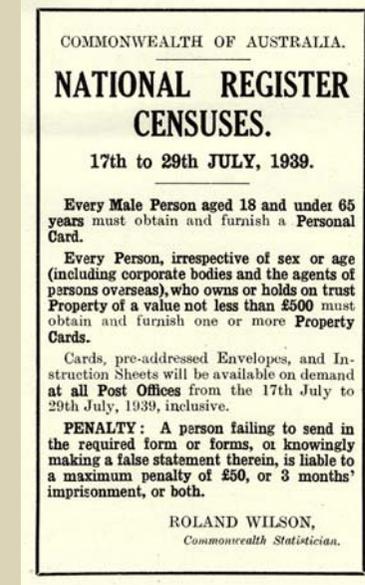
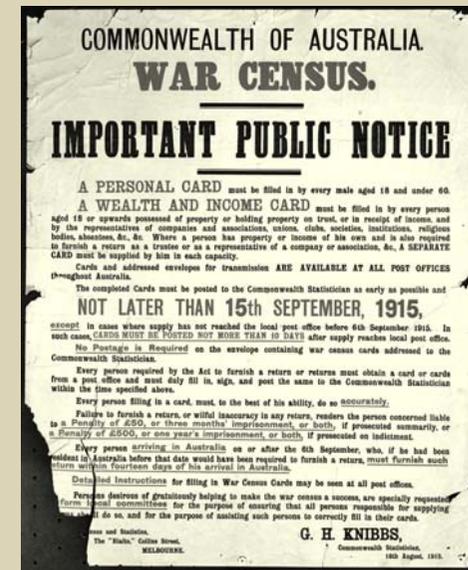
The Bureau published the results of the census of wealth in 1918. The registrations were also used to issue war loans and prospectuses to persons who, according to their stated wealth, were in possession of more than £1000.

The war census for World War II was instigated, planned and run by July 1939 prior to the outbreak of war in September 1939. Because the war had not yet been officially declared, the census was known as a National Register Census.

Both war censuses consisted of two forms: one to produce a register of men aged 18 to 60 years (65 years for World War II), and the other for completion by all persons with wealth or property to declare. All Australians were asked to pick up the forms from their local post office, fill them in and return them to the Statistician (postage was free). The legislation required the continuous registrations of men after they turned 18 years old, throughout both periods of war.

Above right: A poster for the World War I war census of 1915.

Right: Newspaper advertisement proclaiming the National Register Census in 1939.



An outback collection experience

The job of census collector is never easy, but for some it is particularly difficult. Below is an extract from a letter by a police officer undertaking the 1954 census collection in remote Australia. He wrote to the Northern Territory Chief Statistician to report on the conditions he experienced while undertaking the collection.

In reply to your letter dated 12 July 54, in which you request details of difficulties encountered during the census patrol, I quote as follows and trust I do not make the story too lengthy. I will endeavour to be brief, but I had so much trouble that it may be hard.

On Monday the 21st, at 6 am I commenced, visited two local mica mines, then headed around the range visiting stations. On the morning of the 23rd, just as I started off, to cross the Hart's Range, over a very bad rocky road, the generator burnt out ... I returned to the nearest station ... and spent the rest of the day checking the vehicle, and fixing the brakes, whilst the station owner ... went to the neighbouring station ... and borrowed a generator. I started for the hills at 7 am, visited a miner half way across and just at dark reached the miners across the range ... I continued collecting the Census around the mines, until I couldn't drag any more miners out of bed to fill in the census, finishing that day at 12 mn.

On the morning of the 26th, had to climb a mountain to get two more miners ... On the night of the 26th, still going hard at it the water pump bearing completely gave out ... The pump

arrived on the 30th, at 1pm, by 4pm I was on the way, but had only gone a mile when the pulley on the generator collapsed. I ... managed to borrow a pulley of some sort ... I again commenced, having gone another mile or two, the engine was boiling badly ... after fixing the water pump gasket in the dark, and collected the census at six camps, before I camped. Had to pull several miners out of bed, sat on the side of the beds of others and helped them fill in the form.

No road from the border to my next station, so I had to branch into Queensland ... and finally back to the station I was after. Having been given vague directions of these roads ... I ... finally blundered onto Lake Nash ... Only one woman was home, and on enquiries where the Argadargada road was, she pointed west and said straight West, but she didn't know where it went for sure, or if there was water en-route, nor whether it was 120 miles, or 226 miles, before we reached a station. As it turned out, there was a station homestead right on the road 23 miles from Lake Nash.

Nothing else happened, apart from continuous blow-outs, breaking the pump, borrowing another one, borrowing patches, finding a fencer, I bogged the car in the sandy creeks twice, and walked three miles. I went from daylight to almost midnight as a rule, taking the Census, and registrations.

Arriving in Alice Springs on the 12th July, with the Census completed, they said "Where have you been" ... On top of all the Census collection, I was doing registrations, of vehicles,

all sorts of Licences etc, which my colleagues did not do. Takes a long time to register vehicles.

'This is the reaction to the Census form, once produced, and with very few exceptions:

'Most require at least 30 minutes explanation as to why the Census should be carried out. They gasp at the size of the form, and make numerous comments as to whether they have to include the number of teeth they have, criticise the way the form has been drawn up. Can't understand why Nationality and Race are both required, because if they are British, they are not Chinamen. They all have a joyful time getting each others ages, Mother usually won't tell until she has made a cup of tea, or had a girlish giggle, As to who is head of the house, Father accuses Mother of being same, and Mother accuses vice versa. If their name, placed in the column is Shirley, they are naturally female, and the form has been drawn up stupidly when they have to place in a separate column. Some claim they are the Australian race, not the European, they are living in Australia. Hold the pen over the paper, tell funny stories, or go into long reasons why Billy is not a cousin, but a cousin in law or something.

'The above is the usual comments, and although done with the best spirits, and no harm meant, it takes time, particularly when they do the writing ... The people all mean well, and try to assist in anything but hurrying. That was my main trouble.'

Letter from F McTighe, Harts Range Police Station, to the DA Gill, Deputy Field Supervisor Darwin, 12 July 1954.

evidence that they were not consistent in their coding (particularly of non-private dwellings). This finding made the Bureau wary of decentralised processing for future censuses.

The 1954 census marked a major change in the use of punch card operators, with the introduction of Hollerith mark sense gang punches. These automated the punching of cards, and staff who could mark the cards largely replaced skilled cardpunch operators. These were then punched automatically as the marks were read using an electrical conductivity sensing technique. Until this census there was a strong demarcation between male coding jobs and female punching tasks. However in 1954 women began to be used in substantial numbers to code the data.

'For the first time, some systematic measurement was undertaken of coding/markings performance and as a result it became obvious that the women on the whole performed far better than men in coding operations. Since that Census then, the accent has changed from recruiting male coders to one of using female ones.'

RM Walker 'Centralisation and decentralisation considerations in locating the processing operation for large statistical collections with particular reference to the Australian population census', unpublished paper, 1975.

As in the 1947 census, in 1954 the processing was separated from the tabulation, which was completed in Canberra. Sampling techniques were used for the first time for the 1954 census, with a 20% sample of the households of married women used to analyse data on families.

The census back on track

1961 CENSUS

The 1961 census put timing back on track for a decennial census and paved the way for quinquennial censuses. Additions to the schedule included: questions on qualifications for current occupation (professional or trade training); state of usual residence for those temporarily absent from their homes; the existence of a television in the home; and for those living on farms, the distance to their local post office and the size of their

holding. The question on qualifications was used to assist in coding occupation data. The question on state of usual residence appears to have been the Bureau's first attempt at obtaining some form of de jure measurement of the population (according to the place of usual residence rather than the place of enumeration).

Below: The team running the census in April 1961.

(L to R): Jack Gelding, Ken Whigham, Keith Watson, Bill Wilcocks, Aubrey Yeo, Mike Giles, Max Griffiths, Mike Duffy.





The brand new 'Census Trio' machines being unpacked from their crates in front of the Census Office in the Jolimont Building in Civic. In order to install the machines a large hole had to be cut in the wall of the Census Office.

The coding inconsistencies in the 1954 census meant that the Bureau was keen to have all processing completed in one central site for the 1961 census. Unfortunately the size of the workforce, as well as of the machinery, required a larger space than the Bureau could rent on a short-term basis, and two centres were used, both in Sydney. But the coding inconsistency problem was avoided as all the coding (as well as the editing and card marking) was done at one site by about 400 staff, while around 100 staff worked at the second site on preliminary checking. The cards were then sent to Canberra for final tabulation.

The 1961 census was the last census to use mechanical tabulation. The machinery used included the 'Census Trio' machines, which had three functions within the one machine. It sorted the cards, calculated totals, and produced summary punched cards. As in the past, the machinery for the 1961 census was hired under contract.

In 1958 the International Labour Organization (ILO) published the first International Standard Classification of Occupations. The Australian Classification of Occupations used in the 1961 census was adapted from the principles embodied in the ILO classification.

A comparison between the results of the labour force survey and of the 1961 census showed some discrepancies but overall general agreement. The comparison was considered so useful that specific post-enumeration surveys were subsequently conducted after each census.

A new era for census processing CENSUS 1966

The 1966 census was the first Australian census to be held five years after the previous census. The 1960s were a time of great change in the Bureau, and this was reflected in several changes to the development and processing of the census.

Pilot testing of the schedule was introduced for the 1966 census. Mini-censuses of Canberra and Queanbeyan (which the Bureau regularly undertook) were used for this purpose. However in the early 1960s the form was also tested and retested on two random samples of 2000 households in Sydney. Those tests involved the standard schedule filled in by the householder followed by a personal interview. For the first time the number of questions on the census schedule increased substantially (from 15 in 1961 to 24 in 1966).

The 1966 census saw the first attempt at a more complete enumeration of the territory of Papua New Guinea. Previously only the people living in the towns and cities were enumerated. In an attempt to determine the characteristics of the total population, a 10% sample of the remote areas was enumerated by a personal interview method developed by Bureau methodology staff.

For the first time a computer was used for processing of the census, including for editing and coding of the data. The use of the computer appears to have had no impact on the number of staff required nor on the time taken to complete the processing. However the computer did have a significant impact on the quality of the data as it enabled quality control checks to be built into the processing

system. It also made a significant difference to the analysis of the data, with capability to produce far more complex tables than were previously available.

'While it is not expected that simple counts of population will be available any sooner after the event than in previous censuses, benefits of computerisation should include speeding up of more complex tables and the provision of information previously too involved or too costly to obtain.'

DLJ Aitchison, 'The census', address given to the Royal Institute of Public Administration, 15 June 1966.

However the greatest impact of computers was probably in the volumes of data that could be produced and in the flexibility of their production and release. Previous censuses had been confined to releasing tabulations which were planned and created prior to the release of the data. It was not possible to produce variations to tables on request. The computer allowed a significant breakthrough in this regard, because it was able to relate together any data items desired by clients. Tabulations were also made available for the first time on magnetic computer tape.

The 1966 census was also the first in which the Bureau undertook thorough family coding. The 20% sample of the households of married women used prior to 1966 to provide some information on families was clearly deficient in that it excluded other kinds of families including single parent (male or female) families, and families where the wife was temporarily away at the time of the census. In 1966 a specific family classification was developed, with 16 classes ranging from single persons, married couples with and without children, and single parents, to families of adults. This classification also meant that it was possible



A census collector interviewing a family living in Papua New Guinea for the 1966 sample of remote areas.



The big count



Above: The coding floor in the processing centre for the 1966 census.

Left: Mini-censuses of Canberra and Queanbeyan were used to pilot test the 1966 census.

to have more than one family per household, and so a separate household classification was also developed.

Post-enumeration surveys were introduced in 1966, with the aim of checking the accuracy of census figures. They provide an estimate of the undercount of a census, which has become a key measure of the success of Australian censuses.

'The 1966 census will be unique in that both methods of enumeration, the household schedule (English type) and the personal interview (American type), will be used. No sooner will the schedules have been collected from all householders than specially trained interviewers will call upon a scientifically selected sample of one-half per cent of the dwellings in Australia to ask the same questions. By this method it is hoped to test check all answers received from these sample householders and thereby increase the accuracy of the results obtained by the complete enumeration.'

DLJ Aitchison, 'The census', address given to the Royal Institute of Public Administration, 15 June 1966.

The Statistician's Report

For the first six Commonwealth censuses, the main output of the census was a large set of predetermined tables which were published as hard cover bound books. They were accompanied by the 'Statistician's Report' which summarised and analysed the census results. For each census the Statistician's Report took between five and eight years to complete. The last Statistician's Report was released in 1967 for the 1961 census. Part of the Statistician's Report for the 1966 census was prepared but never published.

The demise of the Statistician's Report was due primarily to the time required to develop it. The quinquennial census schedule meant that it was very difficult to put out a publication, with the size and depth of information and analysis in the Statistician's Report, before the following census had to be conducted. Also computers had a profound impact on the dissemination of census information. The availability of all possible data items from the census changed the focus of census dissemination, from large bound volumes of predetermined tables to printouts and information requested by clients.

For the four censuses between 1966 and 1981, a variety of approaches to dissemination developed that took advantage of the rapid technological advances of the times. However by 1986 the Bureau was reconsidering the Statistician's Report. Professor WD (Mick) Borrie wrote to Ian Castles (then Australian Statistician) to request:

'... that the Bureau should consider reviving that splendid document which ceased in 1961, but which gave the Australian people a real feeling of what the national censuses were about – The Statistician's Report ... This computer age is a great boon for the experts and specialists, but the general public never quite knows why they have to answer all those personal questions every five years. We need a Statistician's Report more than ever before if the public is to recapture the value for their money which they got up to 1961.'

Dr WD Borrie, to Ian Castles, in 'Australia in Profile: The Statistician's Report', a speech presented at the 4th National Conference of the Australian Population Association, August 1988.

For the 1986 census several publications were released including *Australia in Profile* (which was seen as directly filling the gap left by the Statistician's Report) and *How Australia takes a Census* as well as a range of analytical publications. However, as with the Statistician's Report, the Bureau had difficulty completing the program of analytical publications before the following census. In the end only ten topical publications were released, but they included *Australia's Aboriginal and Torres Strait Islander People*, *Multicultural Australia*, *Families and Households*, and *One Parent Families*.

More recent censuses have continued to release *Australia in Profile* and *How Australia takes a Census*, along with one or two other topical publications.

A quinquennial census

In 1902 the Conference of Australasian Statisticians resolved that a census should be taken between the decennial censuses then in place, to improve the accuracy of the population counts. However, when the Census and Statistics Act came into force in 1905, the Commonwealth only required that a census be held every 10 years.

A resolution at the 1906 conference backed the 1902 resolution, but was even clearer in calling for a quinquennial census.

'Resolution 8(b) That, for the purpose of securing greater accuracy in the determination of the population of the Commonwealth, it is desirable that an intermediate enumeration be made, the heads of the inquiry being restricted to sex and age.'

'Resolution 8(c) That it is desirable, having in view the characteristics of the movement of population in Australia, as well as the expectation of a considerable increase in the total thereof, as the result of means taken to attract it, that this enumeration should be quinquennial.'

CBCS, Conference of Statisticians, Melbourne, November and December, 1906.

In February 1907, within 12 months of being appointed as the first Commonwealth Statistician, George Knibbs wrote to his Minister, explaining the necessity of a quinquennial census. He pointed out that quinquennial censuses were being considered in the United Kingdom and the United States of America, and were

already in place in New Zealand. A quinquennial census would significantly reduce the magnitude of error in the annual estimates between censuses. This was a key factor in reducing friction between states over their representation in the Commonwealth legislature. He also pointed out an advantage for the Bureau in quinquennial censuses, in that the regular experience was expected to result in more efficient census processes.

'With a census taken only once in ten years, much of the valuable experience gained at one enumeration has been lost before an opportunity has arrived for making use of it at another.'

George Handley Knibbs, letter to the Minister of State for Home Affairs, February 1907.

Knibbs' plea for a quinquennial census was put aside until '... after the 1911 census is taken, when the necessity for and cost of the quinquennial enumeration can be more accurately determined'. This decision appears not to have been revisited.

In 1924 the Conference of Statisticians again stated that a decennial census was insufficient and recommended that a census be taken in 1926. And in 1945 the Conference again called for a quinquennial census in the years ending in six and one.

In a 1946 press statement announcing the date for the 1947 census, Menzies mentions that his Cabinet would consider the possibility of a quinquennial census 'later'.

However, quinquennial census periods did not start until the 1960s. In 1966 the census was undertaken five years after the 1961 census. This pattern of quinquennial censuses continued, but was not directly written into the Census and Statistics Act until 1977. Between 1966 and 1976 the five yearly censuses were undertaken based on the statement in the Act that a census could be taken 'at such other times as is prescribed'.

A High Court decision in 1976 expressed concern that certain aspects of the Electoral and Representation Acts were invalid, and found that an electoral redistribution needed to occur within the life of every parliament. This redistribution would be based on population estimates. Therefore the estimates had to be as accurate as practicable and the best method of achieving accurate population estimates was to have censuses closer together. In 1977 the Act was amended and required that 'The Census shall be taken in the year 1981 and in every fifth year thereafter, and at such other times as are prescribed'.

This change meant that there was now a statutory requirement that the census be taken at least every five years.

A census in the age of dissent

1971 CENSUS

In 1967 the Commonwealth held a referendum, which resulted in the removal of section 127 (as well as a part of another section) from the Constitution. This section had been the barrier to the Bureau including counts of Aboriginal people (but not Torres Strait Islanders) in the census publications. Theoretically this should have involved adding the number of Aboriginal people into the published count since the Bureau had been counting Aboriginal people in the census when it found them, though then not including their numbers in the published census results. However, when the Bureau started to consider how Aboriginal people were to be counted as part of the Australian population, it realised that its coverage had been problematic at best.

There was also a difficulty with the question. Previously the Bureau had attempted to identify 'aboriginality' from the race question, which included asking people to identify what proportion they were of various 'races'. However this proportioning had been worded in a variety of ways over the previous censuses, and the wording had

never accurately reflected the original advice from the Attorney-General's Department as to who was an Aboriginal person. So in 1971 the Bureau completely redesigned the race question and turned it into a question of identification, primarily to collect people of Aboriginal or Torres Strait Islander origin (although people were able to identify with other groups if they chose). People were simply asked to identify to which group they considered themselves belonging.

The pre-testing for the 1971 census included questions on income, and it appeared to produce good results. Unfortunately the household of a minister in the government of the day happened to be selected in the pilot test. Although his was the only objection in the Melbourne sample to the inclusion of the income question, his opinion held sway with the then Treasurer, who insisted that the question be dropped from the final census schedule. This was to the detriment of the later Poverty Enquiry of Professor Ronald Henderson, which could have made great use of such detailed income data.

Just prior to the 1971 census, privacy suddenly became an issue for the first time. The catalyst appears to have been a television program one month before the census called

'Minus 13 ... and counting' (in reference to 13 years prior to the year depicted in the George Orwell novel *1984*). It investigated the supposed privacy invasions of government information collections and focused particularly on the census. Three of the major newspapers of the day took up the protest. The census even became the focus of general dissent against the government. For example, protesters against the Vietnam War were encouraged by the media to write anti-war slogans on the census form.

'The age of dissent had really arrived in 1971 with Vietnam, civil rights, the Springbok rugby tour, the census and the growing publicity about the erosion of privacy overseas by government agencies, computers, etc.'

Brian Doyle, *The Politics of Census Taking*, Working Paper no. C2, 1979.

With a mere \$35 000 to spend on publicity, the Bureau had no chance to reduce this distrust and convey its position. This was the first sign of a trend of anti-census sentiment which peaked for the 1976 census.

The census of big ideas

1976 CENSUS

The 1976 census was developed during a period of great change in Australia's history. The Whitlam government was eager to see statistics to support the major social changes it envisioned for the country.

'The 1976 Census questionnaire was an ambitious social inquiry, largely because the then Government was committed to social change and required information on a wide range of issues for implementation of its policies. No public canvassing of requirements for inclusion in the 1976 was undertaken; Government departments and other known users were approached directly by the ABS in its initial consideration of what should be recommended.'

Brian Doyle, *The Politics of Census Taking*, Working Paper no. C2, 1979.

The number of personal questions jumped to 41 and the dwelling questions to 12. The new topics went before both Houses of Parliament and were passed by them without objection from the opposition, which held control of the Senate.

To determine the cause of the problems with publicity for the 1971 census, the Bureau arranged for a public relations study in 1974. The study also was to create a strategy to ensure the best possible public cooperation for the 1976 census. The report, produced in early 1975, included an evaluation of attitudes towards, and knowledge of, the census among the public. It examined various publicity options to determine the best means of encouraging the public to cooperate with the census.

In late 1975 a new government was installed which would have preferred some changes to the census content. However the content had already been bedded

down and the printing of the forms and support materials was underway. There was no possibility of redesigning and reprinting a schedule in the first months of 1976. The options available were to defer or cancel the census altogether, or to continue with the schedule as printed. Since the then opposition had allowed the census to go through the Senate in 1975, the new government agreed that the census should go ahead. However, because of the government's requirement to reduce expenditure, it decided to defer most of the processing until July 1977.

Furthermore the expenditure reduction meant that only \$50 000 was available for census publicity, despite the recommendation by the public relations consultant for 40 times that amount. In the two months before the census date there was considerable public debate about the census, with privacy a big issue. The Bureau faced attacks from many quarters. With the limited pre-census publicity, the Bureau was unable to clear up all misunderstandings based on inadequate information that arose during the debate.

'The debate reveals a very clear asymmetry in the timing of public interest in the Census. The attacks came long after the census schedule had been printed and distributed around Australia – in effect, at the end of several years work on an official exercise, developed with enthusiasm and support of a very wide spectrum of representative groups in the community, including civil liberties groups. The only effects the attacks could have on the 1976 census were destructive; indeed, some critics openly incited people to refuse to participate in the census.'

Bill Cole (Australian Statistician 1976), 'The Census of Population and Housing, 30 June, 1976', address to the Victorian Branch of the Statistical Society, 26 October 1976.

The census went ahead on 30 June 1976. Preliminary checking and processing was done in the states, with the main processing again in Sydney. Only basic data on age, sex, marital status and birthplace could be tabulated. In July 1977 the bureau was faced with the options of processing parts and deferring the rest for several years (which would impact on the 1981 census), cancelling altogether the more expensive items to process (such as industry and occupation) and processing the rest, or taking a 50% sample of all of the data collected and processing that in full. On balance, sampling was the option to which there was least objection from users. The option meant that the Bureau had to 'throw away' half of the schedules. The rest were tabulated in 1977–78. The post-enumeration survey established that there had been a higher under-enumeration for the 1976 census than for previous censuses.

Up until the 1976 census population estimates were based directly on population census counts. Accordingly when re-benchmarking population estimates it was decided to adjust the 1976 census count for under-enumeration for the first time. Australia is believed to be the first country formally to do so although others have since followed.

'It was therefore decided to adjust the enumerated population figures in each State and Territory, in order to provide a better estimate of the population.'

ABS, *Annual Report*, 1976–77.

This was the first census in which the Bureau attempted to clearly explain to the public the difference between the population estimate and the census count. Also in conjunction with this census the Bureau began to make it publicly clear that census forms are always destroyed once the data from them have been processed.

Religion – the voluntary question

The religion question in the census has traditionally been one of the more controversial questions although in recent decades it was less of an issue. When the Census and Statistics Act was passed in 1905, the religion question was left optional because at that time many recent migrants had come to Australia to flee religious persecution. Since that time, Australian society has been continually changing, so that at some times the optional status of the religion question seemed strange, and at others (such as after World War II) it was seen as very reasonable to keep it optional.

In some ways it seems an unusual question for a government to ask. However, since one of the key uses of the census data for governments is to determine the allocation of major public works (such as schools, roads and hospitals) it is obvious that religious institutions, the only other major institutions to build schools and hospitals, would also need to use the census data. This was true in 1911 and remains so today. As in 1911, the question also tells us something about our multicultural society.

While the question has remained optional throughout the history of the Australian census, the way it has been collected has changed somewhat. In 1911 the instructions were rather circumspect and did not clearly state that the question was not subject to the same penalties as the rest of the form. It merely stated that if respondents objected to giving their religion they could write 'object' next to Religion on the personal card. On the personal card itself, respondents

were simply asked to state their religion. Only 2% of the population wrote 'object'. In 1921 the census included the same instruction and had the same result.

In 1933 it was decided to be more explicit about the voluntary nature of the question. The form included an instruction and the comment: 'There is no legal obligation to answer this question'. The proportion of the population not answering it leapt to 13%. In 1947 the wording of the question was kept the same, with 11% non-response, and in 1954 non-response had dropped to under 10%.

For the 1971 census the question was amended to provide an option for those with no religion. The instruction was 'If no religion write None'. Seven per cent of the population wrote 'None', while the proportion of not stated religion dropped to 6%. Not to state religion is today treated as a valid response, with a meaning different from stating 'None' for no religion.



Consolidation

1981 CENSUS

By the 1980s it was clear that for clients the value of the social information from the census was too important to simply revert to the pre-1970s census topics. Despite the protests of the 1970s, there was no going back to censuses of only 15 or so questions, and in the 1981 census there were 31 questions. The Bureau began to focus on encouraging a greater understanding of the value of census data in the population at large. This was highly effective, and the 1981 census proved to have widespread public acceptance. The media campaigns against the 1971 and 1976 censuses did not occur in 1981. Possibly as a direct result of this, the post-enumeration survey for the 1981 census found an improvement in census undercounting compared to 1976.

The 1981 census saw more public consultation than any previous census. From late in 1977 the Bureau advertised in major newspapers seeking public submissions (for the first time) on the content of the census, as well as approaching Commonwealth departments, state departments and civil liberty organisations. Over 1600 submissions were received for topic inclusions (with 40 new topics suggested) and only 60 or so for topic exclusions. Income (one of the more controversial topics in the 1976 census) received a great deal of support. The Bureau received only 11 submissions to exclude names from the schedule, despite this being seen as a major

issue in 1971 and 1976. Extensive pilot testing was undertaken, and any topic proving problematic was dropped (although often recommended for collection through survey methods instead). This open canvassing and testing of topics was seen as another factor in the success of the 1981 census.

Because of the delay in processing the 1976 census, it overlapped with the planning for the 1981 census. As well, the Bureau had to wait until November 1979 to receive the results of the Law Reform Commission's investigation into privacy and the census. These circumstances made timing tight, but despite this the 1981 census had few major problems.

That census saw the development of new procedures to enumerate Indigenous Australians, including the use of Indigenous people as enumerators of the Indigenous population whenever possible. A special census form was developed for Indigenous peoples in remote areas. There were also new procedures for other ethnic groups, including multilingual brochures and a telephone interpreter service. In total, 32 500 field staff were employed.

After the 1976 census, the Bureau had also received complaints about the 'Head of Household' concept used for the person responsible for completing the census as well as to delineate household relationships. So in 1981 the census moved to using 'Person 1' who could be any responsible adult. Australia was one of the first countries to make this change.

Data from 1981 census were made available on maps, microfiche and magnetic tape as well as the usual publications. Social Atlases were produced for the first time.

Privacy and the need for information

The citizen's right to privacy, in contrast with the needs of government and the people for good information on all Australians, has been a fundamental issue for the Bureau since it was established. Part of the difficulty lies in the fact that what it is acceptable to ask, changes over time with the evolution of attitudes in society. For example, when the Census and Statistics Act came into force in 1905, the religion question was left optional because it was thought inappropriate for governments to demand such information. Likewise, prior to 1981 women were asked the number of children they had borne in their current marriage and, in some censuses, in a previous marriage, but it was thought inappropriate to ask about the number of children they had ever had. Income was another topic traditionally considered too intrusive to include.

In 1971 and again more forcefully in 1976, there was a major public debate about privacy and the census. There were concerns about the nature of some of the questions asked and also whether the respondent's name was really necessary on the schedule. By April 1976 (before the 1976 census was even in the field) the Treasurer had asked the Law Reform Commission, which was already investigating privacy generally, to make any recommendations that it thought necessary to improve census privacy. This resulted in a major investigation for which the Bureau had to justify its census processes and questions.

One of the key elements under question was the necessity for respondents to supply their name on the census form. It was claimed by some in the public debate that the inclusion of names was their key objection. They would be happy to fill in the form if they did not have to include their name. The Bureau did several tests to determine if it was possible to have a census without names (it had not been done anywhere in the world). The tests identified several fundamental problems. One was accuracy – without the knowledge that the Bureau had their name and could check the data, individuals were more likely to leave questions blank, supply wrong answers or simply mail in a blank form in a privacy envelope. It also meant that there was no way to do post-enumeration surveys to adjust the census counts.

In its findings, the Law Reform Commission endorsed the importance of the census and agreed that the processes used were appropriate, including the requirement for respondents to supply their names on the form. It made several recommendations for improvements, but basically supported the census practices.

The main improvements recommended were:

- an extensive publicity campaign to ensure that all Australians were correctly informed
- individuals could not be fined until reasonable steps were taken to warn the individual of the legal consequences of refusing to supply the information



- highly sensitive information should only be asked on a compulsory basis if there are compelling reasons to do so
- the Bureau should ensure that all individuals are made aware of the possibility of filling in a personal slip rather than the household form, and of using a privacy envelope
- the legislation should be changed to allow the release of microdata provided that all chance of identification has been removed.

The trials of being a census collector

A collector in South Australia knocked on a household door and left a census form. When he returned to collect the form, it wasn't there.

Neither was the door.

Neither was the house.

It had been picked up and moved, leaving only a vacant block. There was an even more bizarre conclusion to this story because the form moved with the house and was eventually collected in the home's new area by another collector, who was rather surprised to find a form from a different collector's district.

During the 1991 census a collector knocked on a door. It was opened by a man, stark naked, wearing only a red rose in his teeth. The Latin Lover was as startled as the collector. 'Sorry!', he cried, covering up as best he could, 'I thought you were my wife and I wanted to surprise her!'

A Bureau staff member was listening to the radio in north-western NSW just before census 1996. The John Laws nationally syndicated program was on. There were quite a few calls about the census. One woman phoned in to complain.

'This is just too much', she enthused.

'What's the problem?', asked Mr Laws.

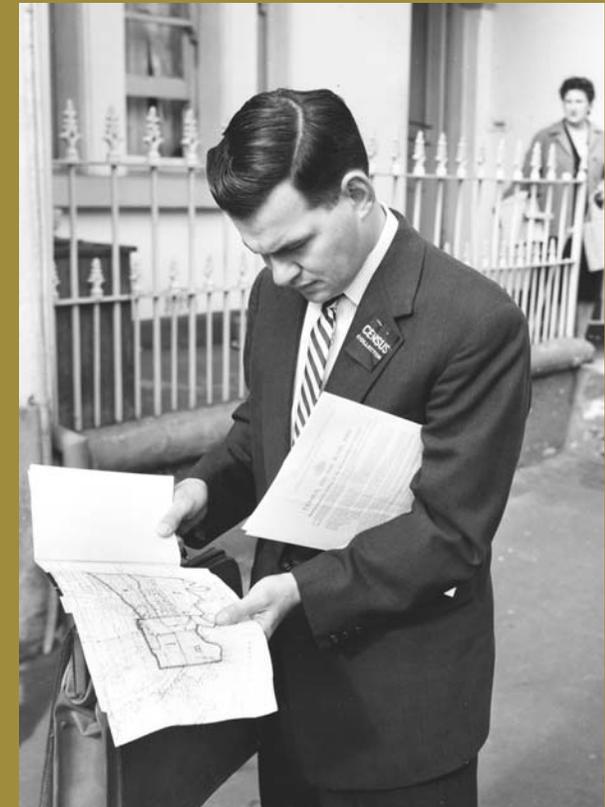
'Well', she replied, 'they want to know how many children I've ever had!'

'And how many children have you had?', enquired Mr Laws in a tone of concerned innocence.

'Six'.

'So, you are willing to announce it on national radio, but you won't put it on a confidential census form!', retorted Mr Laws.

A collector delivering census forms enquired of a farmer whether anybody else lived in the area. The farmer replied that a hermit lived by himself miles from anywhere, but that it would be a waste of time trying to find him. However the collector said that he would have to at least attempt to deliver a census form to the recluse. The farmer, impressed by the collector's determination, offered to take him. So they both jumped into the farmer's four-wheel drive and headed into the bush. They followed a barely discernible track through swamps and bogs, through a locked gate (for which the farmer held the only key), until eventually they came to a little humpy made from second hand corrugated iron and drums. The recluse seemed pleased to see his visitors, and was genuinely surprised that someone would go so far out of their way to ensure that he was not missed in the count.



Fielding a new beginning

1986 CENSUS

The 1986 census was the start of a significant change in collection procedure. Since 1921 the Australian Electoral Commission had been used to organise and supervise the distribution and collection of the census. However, because of industrial relations issues in New South Wales and Victoria prior to the 1986 census, the Bureau took over the management of the collection in those states. This was so successful that the Bureau decided to adopt this procedure for future censuses in all states. A whole new field collection system was developed.

The development for the 1986 census again began with invitations to the public to make submissions on topics for the census, in December 1982. At the same time a committee was established specifically to advise the Statistician on which questions to use relating to ethnicity. This topic had caused some difficulties in the 1981 census, as it was difficult to develop a question which met the needs of the Bureau's clients in this area. Topic evaluation concluded in late 1984, and the submission to government on the topics for the 1986 census included, for the first time, a question on ancestry, following advice of the committee looking at the ethnicity question.

Following amendments to the Census and Statistics Act in 1983 all topics included in the 1986 census were prescribed by a regulation. Previously there was a list of topics in the Act which had to be asked, and any other topics had to be prescribed by regulation.

For the most part, the changes to the 1986 census content were minor. However they had some significant impacts on the results, particularly in relation to family data and, of course, ancestry. Aside from the new ancestry question there were also changes to the language spoken question allowing languages spoken in the home to be

identified. A new question on family members temporarily absent allowed major improvements in the coding of families, with a reduction in the overstatement of single parent families. Another change to the relationship questions meant that de facto couples and blended families could be identified for the first time. Also a change in procedures for caravan parks meant that for the first time families living in them could be identified as families.

This census saw a range of new media for data releases. In particular diskettes and CD-ROMs were adopted as vehicles for data release. The main feature of the CD-ROMs was the addition of mapping data and software so clients could map the data themselves for the first time.

At that time CD-ROMs were a completely new technology and the Bureau was the first statistics agency in the world to market census data using it. This use of CD-ROMs is believed to be the first application of the technology anywhere in Australia. It was soon realised that it would not sell particularly well unless potential clients had access to CD-ROM readers (the hardware needed to access the data). Subsequently the Bureau arranged for the supply of CD-ROMs readers along with the CD-ROMs of census data, and the product proved to be popular beyond expectations.

The great dog bite survey of 1986

After the 1986 census, the NSW Law Reform Commission was reviewing laws relating to civil and criminal liability in terms of dog attacks on private property and asked the Bureau to survey its collection staff concerning their experiences of dog attacks. The survey found that around 9% of collectors experienced a dog attack which involved personal injury or clothing damage, and about 38% of collectors were prevented on at least one occasion from personally delivering or collecting the form, by the presence of a threatening dog. On top of these figures there were many other reported instances of dog incidents where the collector was saved by the owner, a neighbour or a passer-by or even by judicious use of the collector bag.

Also the survey found that not only dogs were causing problems.

'Some collectors also reported encounters with creatures other than dogs. One collector was bitten by a horse and another was 'bailed up' by a horse, while a third met with a large bull standing guard at a house. A few collectors were driven off by geese, two were pursued by pet emus, one was attacked by nesting plovers, and another had the misfortune to be chased by a large pig.'

ABS, 'NSW Survey of Dog Problems in the 1986 Population Census', unpublished report, 1986.

Counting the absolutely homeless

The absolutely homeless are defined in the Homeless Enumeration Strategy as 'People without an acceptable roof over their heads, living on the streets, under bridges, or in deserted buildings'. The census has always had great difficulty in identifying and counting the absolutely homeless.

Before census night in 1996, Bureau staff contacted various organisations that assisted the homeless. It was felt that trying to count people when they were obtaining food would be the most efficient way of locating people in the target population. Consequently, one method was to follow a food van that fed homeless at key sites in Sydney. This is the story of one of the collectors on census night 1996 who followed the food van.

'We followed the bus to its first location, "the Wall" near Green Park on Victoria Rd, arriving shortly after 9.00 pm ... We started asking the people in the park and at the van if they had filled out forms, and tried to get them to answer the questions if they hadn't.

'On several occasions, people declined to answer the questions, saying that they had already filled out a Census form somewhere else, but gave no indication where this might have been. Naturally we had to take their word for it, no matter how unlikely it seemed, and so we would move on to ask someone else. After they heard what questions we were asking, and that their mates were happy to answer, the same people would come

up and say that they had lied earlier, and that they hadn't really filled out a form at all.

'Gaining the trust of these people seemed to be the most important part of the whole operation. Some people seemed to find a female interviewer less threatening. The Census windcheater was also a big help, as it clearly identified us as being from the Census (and not the police). The most common concern expressed was that we would pass the information we were collecting on to the police or DSS. The bus staff also turned out to be very helpful, calling out as people got their food "Has everybody been censused?"

'The people dispersed fairly quickly after getting their meal, and when everyone was fed the staff packed up the bus and we moved on to Central Station. Again we started asking people questions as they got their food. There was a larger crowd at the bus at this stop, and they tended to gather around to some extent as we asked our questions. While there were no problems, I was very glad at this point that the other collectors were nearby.

'Next we set off to see if we could spot any other people sleeping rough in the nearby area. We located a couple of people near the Devonshire St Tunnel, and then found quite a large group of older men at the bus station on the other side of Central Station. Unfortunately these men were not approachable, and one of them was quite hostile. As I approached the Mission Beat

bus which was parked there when we arrived, one particular man (who was clearly not in possession of all his senses) started yelling and ran towards me. Ironically, another man who had been hassling me at Central Station stepped in and kept him away ... Once again, if someone seemed happy to answer the questions others would follow, but the opposite was also true.

'In cases like these where we couldn't approach people, and it was obvious that they would not be completing a form anywhere else that night, we counted them, noted their sex and approximated their age where possible.'

NSW Office census staff, personal comments obtained in 1997.

One event from that evening stood out in the collectors' minds. They found a man who was deaf and dumb. On first approach he was unwilling to answer any questions. However another homeless man explained what the collectors were doing and about the census. While the collectors were getting other people's responses the deaf gentleman wrote out his name and age on a card. He returned to the collectors and signalled with some urgency that he wanted his details to be included on a form. Judging by his writing, it was quite an effort for him to write anything at all. The collectors were touched by what seemed to be a major effort on the part of this man to ensure that he was counted.

A modern census

1991 CENSUS

For the 1991 census the date was moved from 30 June to 6 August to be clear of all school holiday periods. For the first time each state office took over the management of field operations, and the Australian Electoral Commission was not involved. This census also marked the start of regular consultations with the Privacy Commissioner on operational procedures.

Processing of the 1991 census used optical mark recognition to capture much of the information on the forms. This significantly reduced the data entry required. Also computer assisted coding was used for those questions which required coding, which had the dual benefits of reducing the coding load and improving coding consistency.

The 1991 census saw the first edition of *Census Update*, released in September 1991, with the aim of maintaining a regular flow of information to clients on the census. The publication is still released periodically.

While there are always small changes and improvements, the 1996 and 2001 censuses were planned for and organised in much the same manner as the 1991 census.

The cartoonist Pryor's comment on the high levels of unemployment that coincided with the census taken in 1991.

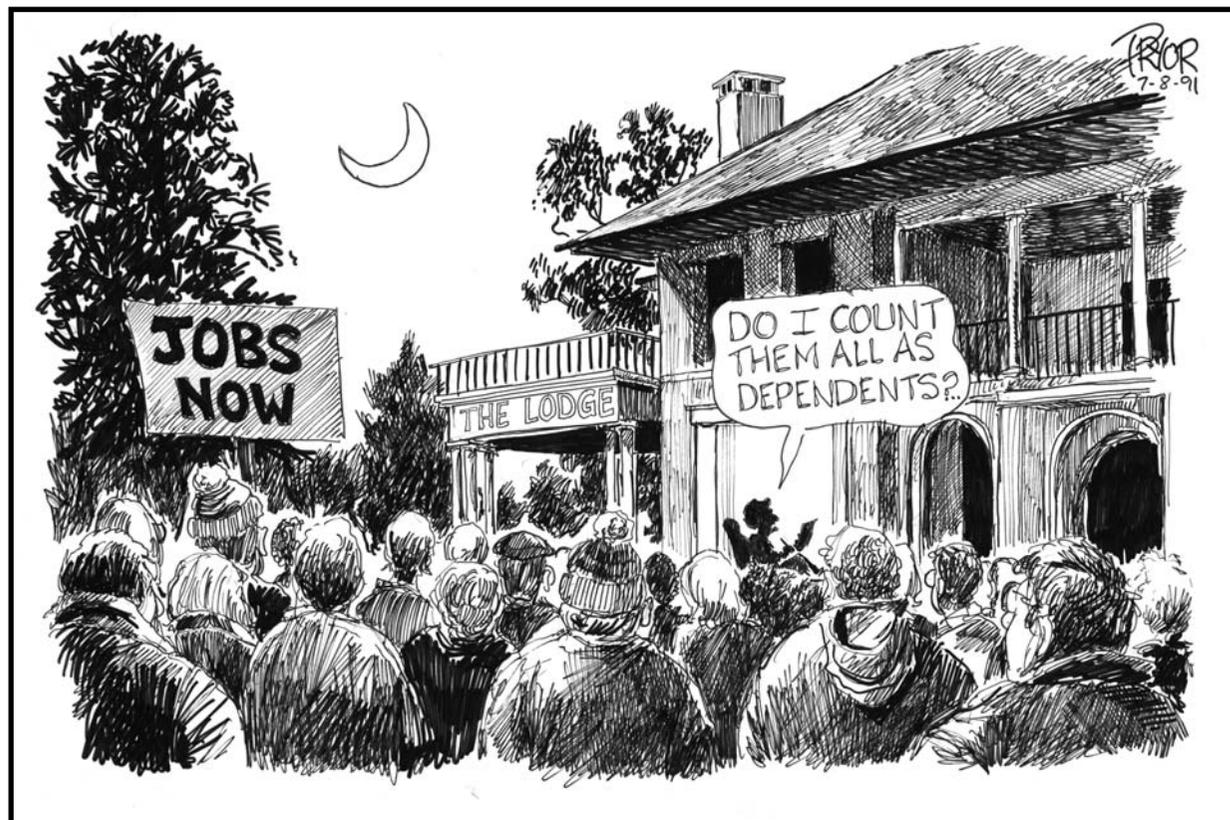
A beautiful set of numbers

1996 CENSUS

In 1993 an interdepartmental Committee was asked to consider options to reduce the cost of the census. It found that neither of the two possible methods (reduce frequency or reduce content) was viable and recommended:

'... the continuation of existing policy for a full content–full enumeration census in 1996 and each five years thereafter; and the full cost of a full content–full enumeration census be treated as existing policy in the Forward Estimates of Outlays.'

ABS, Report of the Interdepartmental Committee on the Review of the Census of Population and Housing, December 1993, 1994.



While there continued to be those who complained about the census, media opinion appeared to have swung back in favour of the census by the mid 1990s. There seemed to be few complaints in the media over privacy at the time the census was run, and on the release of the data for the 1996 census, the Adelaide Advertiser described the census as 'a beautiful set of numbers'.

'The five yearly Census is one of the best public investments Australia makes. It pays for itself many times over in the information it provides for planners in both the private and public sectors. At the everyday human level its findings are engrossing, especially when tracked over time.'

Adelaide Advertiser, 17 July 1997.

The most significant change from the 1991 census was in the release of the data. In a two stage release process, topics were divided into two groups, with the ones that could be processed easily released first. The majority of results were released by 15 July 1997, less than twelve months after the census. This was quicker than for any previous census.

At 1.6%, the census underenumeration rate was the lowest recorded since post-enumeration surveys were first used to assess the completeness of population counts in 1966. One major change for the 1996 census was the use of geographic information systems to generate the printed census maps for census collectors. The manual compilation of thousands of collector maps using traditional cartographic techniques was replaced by a single electronic map database that covered the whole of Australia.

Disability and the census

The census has had a history of trying to adequately capture the extent of disability in the Australian community.

From before Federation, the colonial governments attempted to measure the extent of disability in the community. However definitional problems plagued the question. For example, in 1891 some of the responses to a question on sickness and infirmity elicited the following responses:

- a young woman was stated as suffering from being 'in love'
- another suffered from a 'voracious appetite'
- a wife was described by her husband as 'healthy but bad-tempered'.

The first Commonwealth census of population in 1911 included a question on blindness and deaf-mutism only, in an attempt to reduce the impact of silly or inappropriate responses. A similar question was also used in 1921 and 1933. In each of these censuses the question seemed to work well enough as far as it went. However in 1946 (just before the 1947 census), the item 'sickness and infirmity' was removed from the Census and Statistics Act. It was decided that better data on this area could be obtained from educational institutions and from the records of the 'sickness and unemployment benefits scheme'.

Prior to the 1971 census there was some lobbying for a handicap question. Testing showed however, that the question was still fraught with definitional and reporting difficulties. When it was not included in the 1971 census, pressure intensified and an attempt was made to collect such information in 1976. The 1976 question attempted to skirt the difficulties of diagnosing individual disabilities by couching the question in terms of restrictions caused by handicap. Unfortunately the data from 1976 were found to be useless. A post-census interview to check how well census questions were answered found that 60% of people who had reported a handicap in the census reported that they had no handicap in the review.

Consequently the topic was again removed from the census, and instead was developed as a special social survey. This survey has been run on a regular basis since. However, while the survey is able to fulfil many of the data requirements for this topic, disability data from the census are still highly sought, particularly because they could provide data by small area.

The Bureau has been researching a method for including a question on disability for several censuses, but is yet to find a question that is close to replicating the results of counts from detailed disability surveys. As this history is being written, there are hopes that some of the problems may be resolved for the 2006 census.



The latest census

2001 CENSUS

In the lead-up to the 2001 census, following representations made to the government, a key issue for consideration was whether census forms should be destroyed to protect privacy or kept for historical purposes. This seemed to be a fundamental shift from the 1970s when privacy was the biggest issue. However the issue of keeping the forms had been in existence for many decades. The only recommendation of the Law Reform Commission Inquiry on Privacy in 1979 that the Bureau did not accept was that the forms be kept. In the late 1990s the Bureau took a very strong position on this issue. The experience of the 1970s taught the Bureau to believe that any suggestion that the census was less than completely confidential could have a profound impact on the quality of the data collected.

In 1998 the government decided on a compromise. This gave people in Australia the opportunity to opt in to allowing their personal details with name identification to be preserved for release in 99 years. If they did not answer the question or selected 'no' then their details were destroyed. In July 2001 the Time Capsule Project was launched. On census day 2001, slightly more than 50% of the Australian population chose to opt into the Time Capsule Project, and their records are now preserved in National Archive vaults. On the 7 August 2100 they will be made publicly available. The rest of the census forms were destroyed in accordance with the usual practice.



Phil Smart, Officer In Charge of Meteorology at Davis Station in Antarctica, reading his 2001 census form. Census forms are filled in for every part of Australia – even in the Australian Antarctic Territory. Census forms have been shipped to Antarctica since at least 1954.

One minor issue that gave the census staff some amusement and fortunately not much of a headache in 2001, related to the 'Jedi Knights'. In 2000 an email message began to circulate suggesting that if enough people wrote 'Jedi' as their religion on the census form, Jedi would become an acknowledged religion. The story caught the attention of the media and the Bureau fielded numerous enquiries about the issue. However the story died down before the census. In the end, only a fraction of 1% of the population wrote 'Jedi', and it had little impact on the religion data from 2001. But it did create greater interest in the census among young people which may have helped increase census cooperation.

The 2001 census was the first to use intelligent character recognition to capture all the details from the form. This was a fundamental improvement in the capture of data from practice in the 1996 and 1991 censuses, from which only tick box data could be captured automatically. It certainly helped the processing of the 2001 census to be completed ahead of schedule and below budget.

For the first time also, the web became a key part of the data release strategy including the release of the community profiles.

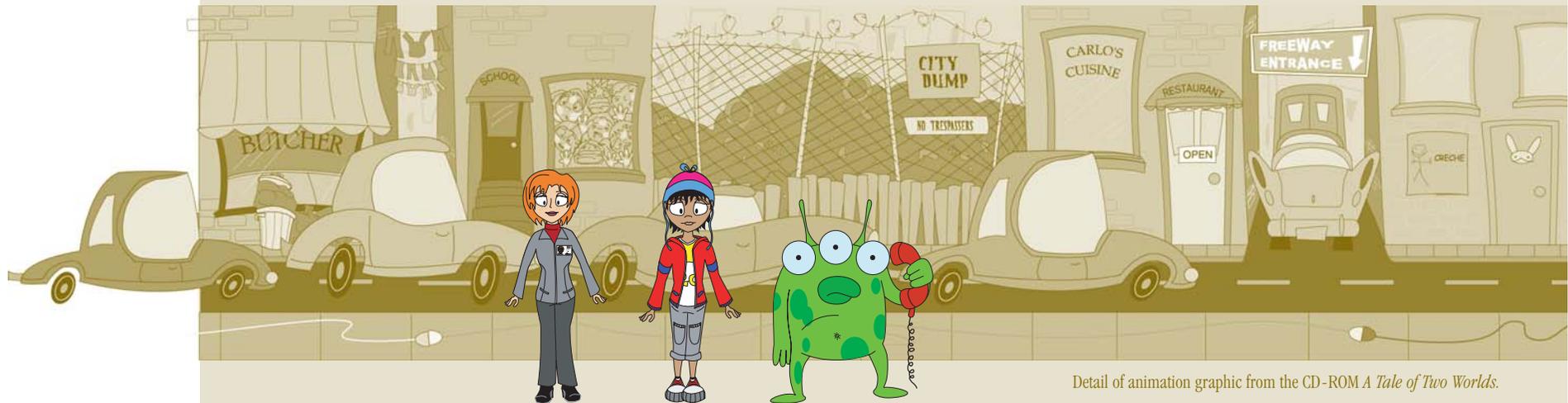
A Tale of Two Worlds

In 1911 when Knibbs decided to release the small book of notes on the census for use by teachers in schools, he would have never envisioned its 21st century successor, *A Tale of Two Worlds*. This was a CD-ROM product released by the Bureau in the lead-up to the 2001 census. Its aims were to demonstrate to schoolchildren the role of the census in a democracy and to show them how the census allows them to play a part in determining the future of Australia.

The CD-ROM gave schoolchildren the opportunity to bring census order to the people of another, chaotic,

dimension. It covered learning areas ranging from society and environment, geography, history, civics and citizenship, to drama and the arts, English and maths. The lesson plans covered Years three to ten.

In May 2001 the Bureau took out an award at the Australian Teachers of Media (ATOM) Awards for *A Tale of Two Worlds*. The award followed an enthusiastic response to the CD-ROM from students and teachers alike in both primary and secondary school sectors.

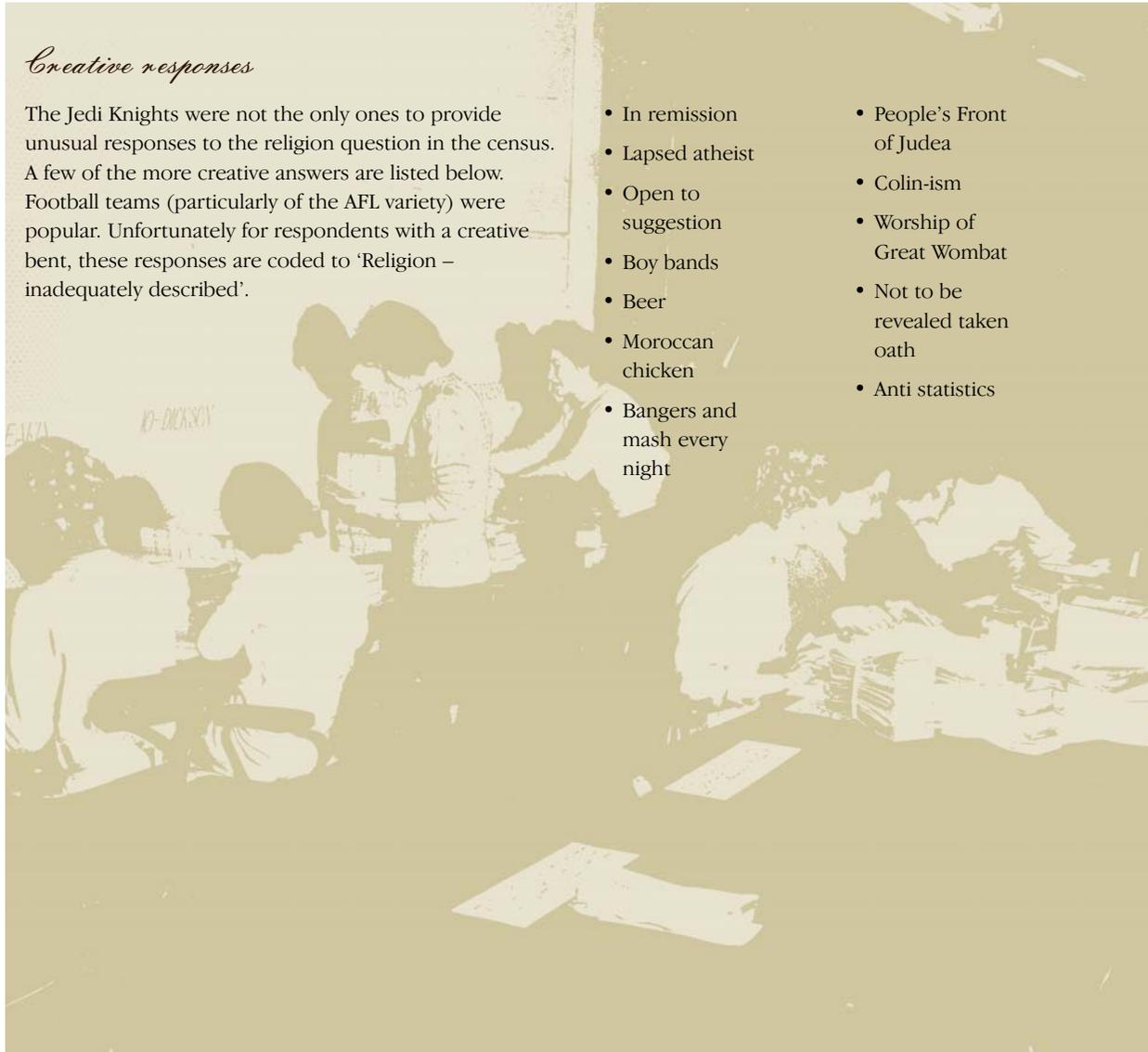


Detail of animation graphic from the CD-ROM *A Tale of Two Worlds*.

Creative responses

The Jedi Knights were not the only ones to provide unusual responses to the religion question in the census. A few of the more creative answers are listed below. Football teams (particularly of the AFL variety) were popular. Unfortunately for respondents with a creative bent, these responses are coded to 'Religion – inadequately described'.

- In remission
- Lapsed atheist
- Open to suggestion
- Boy bands
- Beer
- Moroccan chicken
- Bangers and mash every night
- People's Front of Judea
- Colin-ism
- Worship of Great Wombat
- Not to be revealed taken oath
- Anti statistics



The future of the census

One key change we can expect in the future is the development of census taking via the Internet. This has the potential to reduce census costs, as it could significantly reduce the army of census collectors required as well as improving the quality of the data collected. While it will be possible to respond to the 2006 census in this way, it is likely to be several censuses before major costs savings can be expected.

The census seems to take on greater significance, in its value and use, with each iteration. As the desire to know grows within our society, so does the significance of the census. Today it is particularly important in providing information for small areas or groups. In a world where information abounds and there are often several sources for similar information, there is still no source that comes close to competing with the level of detail available from a census.

Summary of census processing

CENSUS YEAR	CENSUS DATE	TEMPORARY STAFF*	PROCESSING LOCATION	PROCESSING TECHNOLOGY
1911	2 April	8 000	Melbourne	Manual – Adding machines, ‘Millionair’ multiplication machines
1921	3 April	10 000	Melbourne	Mechanical tabulation
1933	30 June	11 000	Canberra	Mechanical tabulation
1947	30 June	12 000	Sydney	Mechanical tabulation
1954	30 June	13 000	Melbourne, Sydney & Brisbane	Mechanical tabulation – automated card punching
1961	30 June	15 000	Sydney	Mechanical tabulation – automated sorting, calculating and punching
1966	30 June	20 000	Sydney	Computer
1971	30 June	**	Sydney	Computer
1976	30 June	25 000	Sydney	Computer
1981	30 June	**	Melbourne	Computer
1986	30 June	39 000	Sydney	Computer
1991	6 August	43 000	Sydney	Computer – Optical Mark Recognition
1996	6 August	40 000	Sydney	Computer – Optical Mark Recognition
2001	7 August	42 000	Sydney	Computer – Intelligent Character Recognition

* Estimate

** Information not available

1910

1920

1930

1940

1950

1960

1970

1980

1990

2000

1901
Federation of Australia

First census after Federation run separately within each state

1905
Assent to the Census and Statistics Act 1905 (Cwlth)

1906
Creation of the Commonwealth Bureau of Census and Statistics

1911
First census developed by the Bureau

1914
World War I began

1915
War census undertaken

1918
World War I ended

1921
Census employment policy of employing returned soldiers first used. Census data required by government to determine impact of war

1929
New York stock exchange collapse heralded world wide economic depression

1931
Census delayed by government due to impact of the Great Depression on government finances

1933
Census undertaken as information on impact of the Depression was desperately needed

The census was recognised as a means of providing work to a significant number of people in the unemployment crisis

1939
National Register Census undertaken just prior to the outbreak of World War II

World War II began

1945
World War II ended

1946
United Nations established

1947
Again census data were needed after the census was delayed due to the war

1954
For the first time the Bureau consulted on the timing of this census with national statistical agencies of countries other than those in the Commonwealth

1961
First computers brought into the Bureau

1966
First computers used for the census

1967
Referendum passed allowing the Commonwealth government to legislate for Indigenous Australians (including allowing them to be counted in the census)

1971
First time Indigenous Australians were included in the published census counts

1972
Change of government

1975
Change of government

1976
Census attacked in media over privacy fears

Significant extra 'social' questions were added to this census during the development phase, but the census itself was run under a different government. This was the only occasion when the data from the census were never fully processed. Instead a 50% sample was used to produce estimates

1981
First full information campaign prior to and during the census to encourage Australians to understand why the census is important

1986
Ongoing industrial action in several state electoral offices

Major change in collection methodology as for the first time some of the Bureau's state offices undertook the census collection themselves rather than relying on the state electoral offices

1996
Census criticised in some of the media over destruction of census forms

2001
For the first time it was possible for an individual family to volunteer for its census form to be held for 99 years and then made publicly available



Operator of an ICT electric punch machine inputting respondent data from cards used in the labour force survey in the 1960s.

Our people, our wellbeing
SOCIAL STATISTICS

chapter six



CHAPTER SIX

Collecting social statistics in the Bureau

Social statistics describe the number and characteristics of our people, their origins, their living arrangements, their social and economic activities and many aspects of their wellbeing. They describe the extent and location of social problems such as ill-health and disability, unemployment, poverty and crime. They help to show relationships between aspects of wellbeing (such as income, health and wealth) and the extent to which various social and community services (such as schools, hospitals, subsidised housing and income support) are used to support people's lives. Together with economic statistics, they provide views of living standards in Australia and how they are changing over time.

While social statistics have always been a significant part of the function of Australia's national statistical agency, what the Bureau collected depended on the tools available at the time, and reflected the social values and concerns of the day.

Over time the amount of information collected on various aspects of life (health, education, employment, income and expenditure, housing, crime and justice, and so on) has been greatly extended. Today the Bureau organises its statistical activities within a framework describing the main topic areas for social (or wellbeing) statistics, and actively engages users in planning and development activities, to ensure that the data are relevant to community needs. Greater concern with relating and even with integrating data sources, to reflect the reality that all aspects of wellbeing are interconnected, has served to enhance the power of statistics in analysing social issues and trends.

Counting people and events prior to Federation

The history of social statistics in Australia is as old as our history since colonisation; the earliest statistics were counts of convicts organised through musters. Later statistics were collected to ensure that services could be supplied to the populations of the colonies. By the 1820s the Colonial Office in London required all colonies to complete the Blue Books annually. These were detailed statistical returns of both people and economic matters. Early in 1853 the Victorian colony passed an Act for the civil registration of births, deaths and marriages. WH Archer was asked by the Colonial Secretary to draw up a plan for implementing the Act. The emphasis in Archer's recommendations was on obtaining social statistics. Archer also undertook the work of producing the Blue Book, combining the position of Registrar General with that of statistical officer. By the mid 1800s most colonies had introduced registrations for births, deaths and marriages, and as a consequence, had begun producing statistics from them. While the quality of such statistics varied between states, some were of the highest quality. The colonies gradually also began to collect other social statistics, relating to schools, hospitals and the courts. Statistical Registers began to be produced from a number of states, and in Victoria under HH Hayter (Archer's successor) the Social Register was so successful that it was held up as the example in Britain.

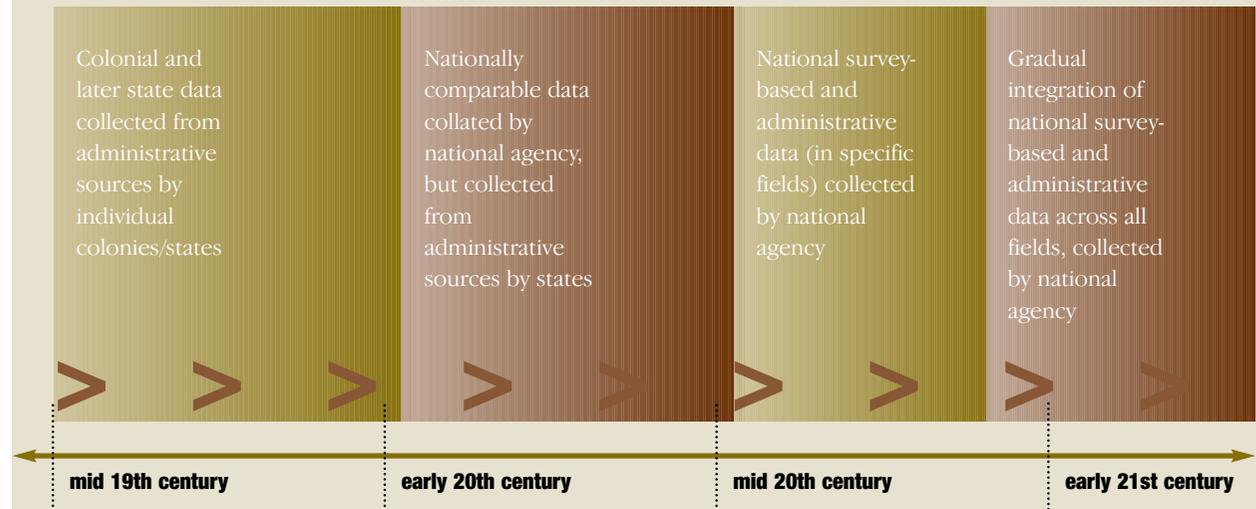
Most colonies also produced a census every ten years, based on the census of the United Kingdom but adjusted to account for each colony's requirements. For Federation in 1901 an attempt was made to produce a national census for the first time. It was developed by each colony separately, but in collaboration with the other colonies. Unfortunately this attempt was not particularly successful, and after Federation the need for a national population census was immediately recognised by the federal parliament, partly to support the functions of a democracy, but also as nationally comparable social and population statistics were considered critical to the work of improving the welfare of Australians.

Stable beginnings

For the first half of the twentieth century most social statistics (education, health, crime, etc.) continued to be collected by the individual state bureaus. However the Commonwealth Bureau would collate the state information to produce national data. Each collection was organised in isolation and, other than through the Year Book, there were few attempts to draw the information together, unlike the case with economic statistics. With the integration of the state offices with the Commonwealth Bureau in the late 1950s it acquired their functions, including the collection of social data. At this point social statistics, apart from the population census, were still entirely based on administrative by-product data. Not until the development of sample surveys, and their application to households in the 1960s, did it become possible to survey the population.

Collecting social statistics

The diagram illustrates the major changes that occurred in the collection of social statistics in Australia, aside from the population censuses.



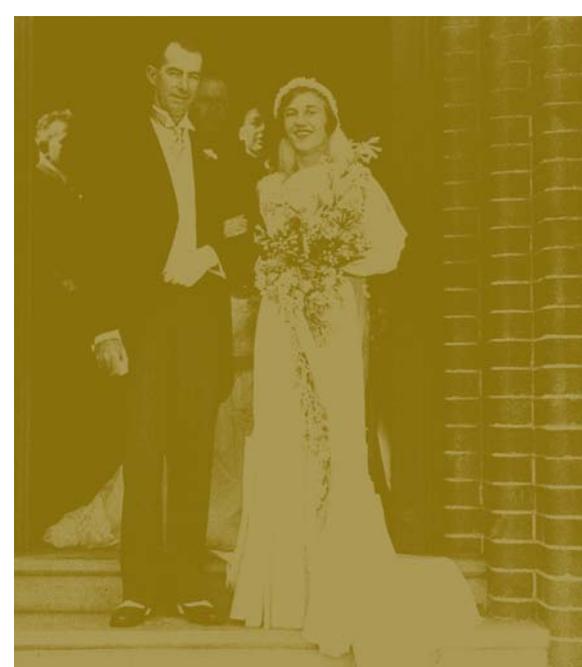
The first sets of social statistics prepared by the Commonwealth Bureau, were obtained from administrative collections such as birth, death and marriage registrations (collectively known as vital statistics). As well as these statistics, the first Year Book included data relating to education, courts, prisons and hospitals, libraries, museums and charities. The state statistical agencies or other state departments collected all this information, with the national data collated by the Commonwealth Bureau. However the census was the main source of national social statistics, and remained so until the expansion of the social survey program in the 1980s.

For around 65 years, information on population, births, deaths and marriages was collated from the state collections and released in the *Population and Vital Statistics Bulletin* (later called the *Demography Bulletin*), first released in 1907. This bulletin continued until 1974, by which time it had been replaced with a series of separate publications. Its focus included some of the significant social concerns of the time. For example, birth rates were carefully watched at the beginning of the twentieth century, as they had been far lower than was desired. Also the proportion of males in the population received a great deal of attention in the early decades of the twentieth century, as the high ratio of males to females resulting from immigration was still a matter of concern.

'In most European countries there are more females than males, but in comparatively undeveloped lands such as our own, males usually predominate; this is caused by the immigration of males and the general unattractiveness of pioneering conditions for females.'

HJ Exley, 'Australian Official Statistics', unpublished paper, circa 1929.

This concern disappeared with the impact of World War I on the numbers of men in Australia. The collection and dissemination of births, deaths and marriages information was seen by many as so integral to the business of a statistical agency that some state Statisticians were also the state Registrars. Such arrangements continued long after the Commonwealth Bureau came into existence. VH Arnold was a well known example; he was the State Statist in Victoria from 1953 to 1973 and in 1958 he also became the Deputy Commonwealth Statistician. He also held the position of Actuary and Registrar for Victoria. As both Registrar and Statistician he struck out the word 'illegitimate' from birth registrations and replaced it with 'ex-nuptial'.



Statistician and Registrar

When Sir Roland Wilson (later the fifth Commonwealth Statistician) first joined the Bureau in 1932 he worked as an assistant to Giblin (then acting Commonwealth Statistician). This included acting as the ACT Register.

'During that period I was the nominal Registrar. Once I distinguished myself by consenting to the marriage of one bastard to a second bastard and then splicing [marrying] them on the spot. Back in those days, of course, you had to have the consent of parents living in the ACT, but under certain circumstances when you didn't know who your parents were, you had to get my consent as Registrar.'

Roland Wilson, address to mark the 50th anniversary of his appointment as Commonwealth Statistician, 29 April 1986.

Statistics of overseas arrivals and departures, describing the arrivals of people in and their departures from all the ports of Australia, mainly by ship (later also by air), were of particular relevance for our migrant nation. The Bureau, from its establishment, has published national data annually. In 1920 the Bureau started publishing the nationality of people coming to Australia and divided them into 'white' and 'coloured' nationalities, reflecting the policies and prejudices of the period.

Another topic area in which the Bureau sought to provide national statistics early in its history relates to employment and unemployment. A Labour and Industrial Branch was set up in the Bureau in 1911, and labour statistics were collected for the first time in 1912. Most of these statistics were collated by the state statistical agencies from the various union bodies. This method produced useful results, although the membership of reporting unions represented only 25%–30% of all wage and salary earners. Also, obtaining the details from the unions was not easy.

'The task of obtaining a complete enumeration of practically the whole of the unions in Australia has been a formidable one. Only very few of the smaller unions maintain business offices. The frequent change of officers; the failure to appreciate that it was compulsory (under the provisions of the Census and Statistics Act) upon the Secretaries to answer the inquiries to the best of their knowledge, belief and information; the organisation and dissolving of unions and branches; misconceptions as to the object and value of the investigations of the Bureau, and the disinclination to furnish information of a confidential nature, the publication of which (it was thought) would be detrimental to the interests of trade unionism, have all contributed to delay the completion

of the work. It is, consequently, more than ordinarily satisfactory to observe that it is now widely recognised by labour organisations that statistics of individual organisations are absolutely confidential.'

CBCS, *Trade Unionism, Unemployment, Wages, Prices and Cost of Living in Australia, 1891–1912*, Labour and Industrial Branch Report No. 2, 1913.

A labour related statistical series collected from 1913 was the wage rate indexes, sourced from award variations by fixing authorities. This became one of the longest running collections in the Bureau, surviving more than eight decades. Although it was rebased a number of times, the methodology remained basically the same until it was replaced by the wage cost index in 1997.

A collection measuring household income and expenditure was also an early priority of the Commonwealth Bureau as it struggled to meet the data needs of those bodies determining the appropriate level of wages and pensions. In 1910–1911 a collection was undertaken titled 'Inquiry into the Cost of Living Australia'. Around 1500 diaries were distributed to volunteers who were asked to keep records of their expenditure for 12 months. However less than 15% of the diaries were completed and returned. This low response made its use somewhat limited. At a second attempt in 1913, 7000 diaries were distributed, but respondents were only asked to keep records for one month. Unfortunately only 6% of these diaries were returned. Due in part to the difficulties experienced by these early cost of living inquiries, further work in this area was limited primarily to war censuses, until the 1970s (see chapter 4 for more information on the early cost of living inquiries).

Expenditure on Living, November, 1913. —Average Weekly Expenditure per Family on various Items of Food.

PARTICULARS.	FAMILIES HAVING WEEKLY INCOMES OF—								GENERAL AVERAGE.	
	Under £3.		£3 and under £3 10s.		£3 10s. and under £4.		£4 and over.		Nov. 1913	1910-1911
	Over 4	4 and under	Over 4	4 and under	Over 4	4 and under	Over 4	4 and under		
WEEKLY EXPENDITURE.										
Bread	3 3	1 9	3 4	1 10	3 8	2 2	2 4	1 11	2 10	2 4
Milk	2 7	1 11	2 10	2 1	3 0	3 2	3 4	3 8	2 10	2 8
Flour	1 0	0 6	0 11	0 8	0 10	0 9	1 2	0 7	0 10	0 8
Tea, Coffee, etc.	1 3	1 0	1 3	1 0	1 5	1 3	1 4	1 1	1 3	0 11
Sugar	1 7	1 2	1 11	1 2	1 9	1 4	2 0	1 3	1 7	1 4
Butter and Cheese	3 2	2 4	3 8	2 8	4 3	3 2	4 7	2 11	3 5	2 11
Eggs	1 2	1 3	1 5	1 4	1 1	1 9	1 8	1 10	1 6	1 5
Bacon and Ham	0 4	0 7	0 5	0 9	0 11	0 9	0 8	0 11	0 8	0 8
Meat	5 3	4 10	6 1	4 9	6 9	5 10	8 1	5 7	6 1	5 3
Rabbits, Poultry, etc.	0 2	0 2	0 1	0 1	0 3	0 1	0 3	0 3	0 2	0 2
Fish	0 6	0 6	0 6	0 7	0 7	0 6	0 9	0 10	0 7	0 7
Potatoes	1 1	0 9	1 4	0 10	1 2	1 0	1 4	0 9	1 1	1 1
Fruit	1 4	1 6	1 9	2 0	2 8	2 9	2 9	2 8	2 2	2 2
Vegetables	1 3	1 3	1 2	1 5	2 0	1 8	2 3	1 10	1 8	1 8
Other	2 10	2 4	3 5	2 10	4 6	3 4	4 7	4 11	3 8	4 9
TOTAL	26 9	21 10	30 1	24 0	34 10	29 1	38 10	31 0	30 3	23 4
PERCENTAGE ON TOTAL EXPENDITURE.										
Bread	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.	per cent.
Milk	5.80	3.38	5.02	2.90	4.97	3.16	4.24	2.96	3.85	2.93
Flour	4.61	3.70	4.27	3.30	4.06	4.62	3.46	3.94	3.85	3.35
Tea, Coffee, etc.	1.78	0.97	1.38	1.06	1.13	1.69	1.21	0.83	1.13	*
Sugar	2.23	1.93	1.88	1.58	1.92	1.82	1.39	1.16	1.70	1.15
Butter and Cheese	2.82	2.25	2.89	1.85	2.37	1.94	2.08	1.34	2.18	1.67
Eggs	5.65	4.51	5.53	4.22	5.76	4.01	4.76	3.13	4.88	3.66
Bacon and Ham	2.08	2.41	2.14	2.08	1.47	2.55	1.73	1.97	1.93	*
Meat	0.59	1.13	0.63	1.19	1.24	1.09	0.69	0.98	0.91	*
Rabbits, Poultry, etc.	0.36	0.34	0.17	7.52	9.14	8.51	8.49	5.99	8.28	6.50
Fish	0.30	0.32	0.13	0.13	0.34	0.12	0.25	0.27	0.23	*
Potatoes	0.89	0.97	0.75	0.93	0.79	0.73	0.78	0.89	0.79	*
Fruit	1.93	1.45	2.01	1.32	1.58	1.46	1.39	0.80	1.47	1.47
Vegetables	2.38	2.90	2.94	3.17	3.61	4.01	2.86	2.95	2.95	3.98
Other	2.23	2.42	1.76	2.25	2.71	2.43	2.34	1.97	2.27	3.27
TOTAL	5.05	4.51	5.15	4.50	6.09	4.87	4.76	5.28	4.99	5.97
Average No. of persons per family	47.70	42.19	45.35	38.00	47.18	42.41	40.35	33.27	41.18	29.30
	6.16	3.28	6.34	3.34	6.72	3.08	6.86	3.30	6.10	4.68

* Included under "other items."

Expenditure in Australian households captured in 1913.

After the first 10 years there was little change in the areas of social concern for which data were collected and collated by the Bureau. One of the few new areas emerging during the 1920s related to the need to collect accurate information on Indigenous Australians. The calls of state governments for separate data on the numbers of Indigenous Australians eventually compelled the Commonwealth Bureau to undertake a separate 'Aboriginal Census' in Australia.

Our people, our wellbeing

The Aboriginal census

It appears that early Statisticians would have preferred to include Indigenous Australians in the population census from the beginning, mainly because they were committed to the importance of a comprehensive population count. Also, particular states were interested in having counts of the Indigenous population as details of their births, deaths or migration were often not recorded by the state registrars. But the Commonwealth Parliament saw the main purpose of the population census as providing the basis for redistribution of seats prior to elections, as required by the Constitution. Since Indigenous Australians were unable to vote, it was determined by Parliament that they should not be counted in the population census. However, this meant that the state governments, who were responsible for the welfare of Indigenous people, had little information on them.

The Aboriginal census (so named because at that time the Torres Strait Islanders were not recognised as a separate indigenous group) was run annually from 1924 to 1941. There also appears to have been one in 1921 (probably in conjunction with the population census). The last one undertaken under the auspices of the Commonwealth Bureau of Census and Statistics was in 1944 (after it had been suspended during the much of the war). The Aboriginal census was not run under the authority of the Census and Statistics Act, and appears to have involved collaboration between the Commonwealth and state statistical bureaus, the states' Protectors of Aborigines, and the police.

While this collection was described as a census it was in fact a combination of relatively accurate counts in some areas and pure estimates or even guesses for other areas.

'The obstacle to obtaining authentic figures is particularly marked in Western Australia where, year after year, since the first systematic Aboriginal census was taken 11 years ago, the estimated number living outside governmental control has not varied from the original number of 10 000.'

CBCS, 'Aboriginal census 1932', Press Release, 12 January, 1933.

In 1934 particular effort was put into a complete check of most of the outlying districts of Western Australia and Northern Territory. This resulted in a significant downward revision of the estimates. In 1940 there was a further large decrease due to the exclusion of Torres Strait Islanders. Until 1940 Torres Strait Islanders had been recorded as Aborigines.

At the 1945 Conference of State and Commonwealth Statisticians it was agreed that no more national annual Aboriginal censuses would be undertaken. Instead, Indigenous Australians were to be enumerated separately during the population censuses.

The First and Second World Wars impacted on the Bureau's collection of social statistics. During both wars, wealth censuses were run to determine the nation's ability to support the war effort as part of the War Censuses (see Chapter 5). These were tied in with censuses of adult men to determine the 'manpower' available to fight the war. The wealth censuses provided not only measures of income and the value of property owned, but also counts of vehicles and livestock. It was thought that wartime was the only time when information on wealth could be collected which was deemed too intrusive to ask at other times.

'The census method is not convenient to employ for the purposes of an estimate of wealth since in normal times its inquisitorial character is objected to, and its cost is very great.'

CBCS, *Official Year Book of the Commonwealth of Australia 1925*, No.18.

After World War II, concerns over the impact of the war on the population (particularly of men) affected the reporting of population statistics for over a decade. From 1946 to 1960, deaths of defence personnel were separately listed in the population data. This was probably a reaction to the fact that World War I had had a significant impact on the population of men. The loss of men had meant that a generation of women had reduced chances of marrying. This, in turn, had impacted on the birth rate.

WRITE CLEARLY.
COMMONWEALTH OF AUSTRALIA: NATIONAL REGISTER.

To be filled in by all persons (including corporate bodies and the agents of persons absent from Australia) who own or hold on trust property of a value exceeding £500. Name in full of person to whom this return applies—

(If an individual, write surname first in BLOCK LETTERS. State if Mr., Mrs. or Miss.)
Usual Postal Address of person to whom this return applies—

State
(If away from usual residence when filling in card, give address of usual residence.)
What was the approximate value of Real and Personal Property owned or held by you on 30th June, 1939, comprising—

If return is made in respect of your own property, fill in column (A) but not column (B). If return is made in respect of property held on trust, property of a company or property of an alienist fill in column (B) but not column (A).

	(A)—On Own Account.	(B)—On Account of Other Persons, Companies or Alienists.
	£	£
Assets on 30th June, 1939		
1. Cash in hand
2. Savings Bank Deposits
3. Money at current account in Banks, &c.
4. Fixed deposits in Banks, Building Societies, &c.
5. Government and other Public Securities, &c.
6. (a) Shares in Companies
(b) Debentures of Companies
7. Amounts owing—(a) Mortgages on Land
(b) Other Accounts
8. Value of Stock-in-trade
9. Value of Live Stock
10. Value of Plant, including Machinery, Tools, Implements, Vehicles, Felling Stock, &c., used for trade purposes
11. Value of Furniture and Fittings used for trade purposes
12. Value of Land Owned— If sole / Unimproved Value £
owner / Value of Improvements (including Buildings) £
If not sole owner, Value of your Interest
13. Net Value of Interests in Leases held— (a) From Private Persons
(b) From the Crown
14. Value of Share of Net Assets in Partnership or Syndicate undertakings
15. Value of Household Furniture and Effects and Personal Effects (including Vehicles and Plant used for other purposes than trade or occupation)
16. Value of Interests as a Beneficiary in Trust Estates
17. Value of Property not enumerated above, exclusive of Life Assurance and Friendly Society Policies
TOTAL ASSETS
Liabilities on 30th June, 1939		
18. Bank Overdraft
19. Amounts owing on Mortgages on Land
20. All other Amounts Owing
TOTAL LIABILITIES
Difference between Assets and Liabilities

Notes.—With respect to Trade Assets and Liabilities only, the particulars as per the latest balancing date on or after the 30th June, 1939, may be used for the purposes of this Form.

Signature and Address of the Person required to make the Return—
Signature Address

Details collected by the wealth card for the National Register (or war census) taken immediately prior to World War II.

Counting the population during the Wars

Counting the population during the First and Second World Wars caused considerable headaches for statisticians. For example during World War II the Conference of Statisticians agreed to split the population into two distinct parts – the civilian population and the defence force personnel. Only the civilian population was published. This meant that troop movements would not affect migration figures. The deaths of persons in the defence forces were also excluded from registrations and from the published deaths data. The reasons cited for this were that:

- deaths from operations of war introduce abnormal features to the data, impacting on the series' comparative purpose
- deaths of men living in camp under war conditions from ordinary diseases were still thought to be abnormal in their incidence
- no complete system of registration for service deaths was available
- there would be official objections to allowing service deaths to be included in the published figures as they occurred.

Presumably the official objections related to concerns of the government of the day over the impact on the morale of the population if the full number of deaths was regularly published. All this meant that the question of wartime deaths could not be addressed until the war was over.

A new labour collection during World War II was the survey of average weekly earnings. This was made possible by the 1941 introduction of payroll tax, and was sourced from the payroll tax returns.

Until the 1960s social statistics were developed primarily in the state bureaus. Their development of vital statistics in the 19th century had produced world class systems, and the censuses of the colonial bureaus had laid solid foundations for the censuses produced by the Commonwealth Bureau. However data in areas of social concern not covered by vitals or the census were patchy at best at the national level. Although state level data were often very good in individual states, they were difficult to compare between states. Where data did exist they often measured administrative counts of participants using an existing service (such as school children and hospital admissions) rather than determining what services Australians required and whether the services offered were adequate to their needs.

Pervasive change

While there were few changes to the array of social statistics compiled by the Commonwealth Bureau in the first half of the 20th century, the second half more than made up for that. The introduction of sample survey techniques to the Bureau, coupled with the introduction of computers, meant that it was no longer necessary to rely on censuses and administrative collections for all social data. Sample surveys of households were now possible.

At the same time, the integration of state bureaus in the late 1950s meant that some of the states' social statistics priorities permeated the priorities of the Bureau as a whole. The agreements for integration included assurances that the integrated Bureau would continue to provide statistics for the needs of the states as well for the federal government. And the states' responsibilities included far more areas of social concern (such as education and health) than those of the federal government at that time.

In the late 1950s and early 1960s Ken Foreman established the Bureau's first household survey, the survey of employment and unemployment (later renamed the labour force survey). Made possible by the major advances in survey methods and technology, this survey was primarily the result of intense interest from Commonwealth Treasury. Labour force surveys were conducted quarterly from 1960 in the six state capitals. However results were not published until the full national survey was introduced in 1964.

'Foreman was the inspiration for the development of the quarterly labour force surveys which were introduced in 1959. Although the US model was followed, there were numerous

Early supplementary topics

The labour force survey began in 1960 as a simple set of 23 questions on one small card. However within a year, supplementary surveys were attached to the main survey. The topic of internal migration was the first to be included, in the November quarter 1961. The addition of the three internal migration questions to the card was not difficult; the text was simply squeezed up a little to allow the extra questions. However the second supplementary survey, in May 1962, was a survey of ex-servicemen that required 12 questions, so the supplementary survey was placed on a separate card. The third supplementary survey, in February 1964, related to school leavers and only required two questions; it was again squeezed onto the main card.

As more and more surveys were run, the main labour force questions were confined to one side of the card and the supplementaries were forced to fit on the back of the card. A research officer in the field survey operations group in the early 1970s, recalled that:

'... the questionnaires ... were for some years squeezed onto the front and back of a small piece of cardboard – quarto size or smaller. I can remember as a young research officer in the then Field Survey Operations Group physically designing a card to fit on it as many as possible of the data items which had been justified in terms of users' information needs. Interviewers in the 60s and 70s learned to read small fonts accurately and correctly mark very small tick boxes!'

Glenn Cocking, 'The Development of the Australian Population Surveys Program', unpublished paper, 2001.

By the end of the 1960s, 25 supplementary surveys had been run in 11 topic areas. Often more than one survey was run at the same time, and it was a rare quarter that did not include at least one supplementary. The topics ranged considerably by the 1960s and included multiple jobholders, travel, chronic illness, superannuation, non-study courses and work experience. In the late 1960s the labour force supplementaries began to expand into a broader range of social topics including child care and income. The most unusual topic was run in February 1970 for Victoria only, apparently on behalf of the Victorian Egg Board. It inquired of householders the number of hens kept at the home, how many eggs they produced and how those eggs were used.

In 1978, the labour force survey card was redesigned and became an A4-sized form. Since then readability and usability have become increasingly important.

<p>22. (If "institutionalised", no more questions) IN WHICH STATE OR TERRITORY WAS..... USUAL PLACE OF RESIDENCE AT 30 APRIL?</p> <p>23. IN WHICH STATE OR TERRITORY WAS..... USUAL PLACE OF RESIDENCE AT 1 MAY 1968?</p> <p>Codes for questions 22 and 23 1 N.S.W. 4 S.A. 7 N.T. 0 Not known 2 VIC. 5 W.A. 8 A.C.T. 3 QLD 6 TAS. 9 O'ceania</p> <p>(If aged 21 years or over and if answers to 22 and 23 are different, ask 24; otherwise, skip to 26)</p> <p>24. WHAT IS..... NATIONALITY? Aust. or British (Go to 26) <input type="checkbox"/> 0 Other <input type="checkbox"/> (Ask 25)</p> <p>25. IS..... A NATURALISED AUSTRALIAN OR BRITISH SUBJECT? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2 Skipping both 24 and 25 <input type="checkbox"/> 9</p> <p>26. No more questions if any of - <input type="checkbox"/> aged 14 years or less <input type="checkbox"/> aged 60 years or more <input type="checkbox"/> never married male <input type="checkbox"/> married male (excl. perm. separated) went to school (box 5 in 6) <input type="checkbox"/> perm. unable to work (box 7 in 6) NUMBER OF CHILDREN FOR WHOM RESPONSIBLE 16-19 years, at school .. <input type="checkbox"/> 12-15 years, at school .. <input type="checkbox"/> 6-11 years .. <input type="checkbox"/> 0-5 years .. <input type="checkbox"/> (If any children 0-5, complete 28; otherwise, skip to 29)</p> <p>27. Off. use only Head of household <input type="checkbox"/> Husb. - Age <input type="checkbox"/> Occ. <input type="checkbox"/> Occ. Status <input type="checkbox"/></p>	<p>28. CHILD(REN) 0-5: Child Name Age A (Oldest) <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D <input type="checkbox"/> (If less than four children 0-5, enter "0" in remaining box(es). If skipping, enter "0" in each box)</p> <p>29. Sequence Guide If employed or laid off (1, 2, or 9 in 9/10)- without children 0-11, no more questions with child(ren) 0-11, skip to 33 .. <input type="checkbox"/> 2 If looked for work (1 or 2 in 14/15)- with child(ren) 0-5, skip to 34B .. <input type="checkbox"/> 3 with child(ren) 6-11 but none 0-5, skip to 37 otherwise, no more questions .. <input type="checkbox"/> 4 If not in the work force, ask 30 <input type="checkbox"/> 6</p> <p>30. WHAT WOULD..... SAY IS THE MAIN REASON WHY..... DOES NOT WORK? No child care arrangements <input type="checkbox"/> 1 Children too young .. <input type="checkbox"/> 2 Other domestic responsib. <input type="checkbox"/> 3 Ill health, pregnancy <input type="checkbox"/> 4 Husband doesn't approve <input type="checkbox"/> 5 Doesn't need to, or want to <input type="checkbox"/> 6 No suitable work .. <input type="checkbox"/> 7 Other (Specify) .. <input type="checkbox"/> 8 Skipping 30 <input type="checkbox"/> 9 (If 3-8 above, no more questions)</p> <p>31. WOULD..... WORK IF..... HAD SUITABLE CHILD CARE ARRANGEMENTS? Yes <input type="checkbox"/> 1 No <input type="checkbox"/> 2 Don't know } (No more questions) <input type="checkbox"/> 3 Skipping 31 <input type="checkbox"/> 9</p>	<p>32. WHAT SORT OF ARRANGEMENTS WOULD..... WANT? Care centre, after school centre, etc. } (No more questions) <input type="checkbox"/> 1 Other (Specify) } <input type="checkbox"/> 2 Skipping 32 <input type="checkbox"/> 9</p> <p>33. AT WHAT TIME DOES..... USUALLY LEAVE HOME FOR WORK AND ARRIVE HOME FROM WORK? Leaves home Arrives home Varies daily (Specify) Works at home (No more questions) (If skipping, enter "0" in each box)</p> <p>34A. (If no children 0-5, skip to 37) COULD YOU TELL ME WHO USUALLY MINDS (names in 28) WHILE..... IS AT WORK? 34B. COULD YOU TELL ME WHO WILL MIND (names in 28) WHILE..... IS AT WORK? Enter one of the following codes in each box: 0 Not applicable 1 Nursery, creche, care centre, etc. 2 Home care centre 3 At school 4 At home, with relatives 5 At home, not with relat. 6 Elsewhere, with relatives 7 Elsewhere, not with relat. 8 Other (Specify) (If skipping, enter "0" in each box)</p> <p>35. (Ask only if code 1 or 2 for any child in 34) WHAT IS THE NAME AND ADDRESS OF THE (care centre, etc.)? (If skipping, enter "0" in each box)</p>	<p>36. (Ask only if codes 4-8 for any child in 34) WOULD..... PREFER OTHER ARRANGEMENTS FOR (names coded 4-8 in 34)? Enter one of following codes in each box: 0 - Not applicable 1 - Yes 2 - No (If skipping, enter "0" in each box)</p> <p>37. (If any children 4-11 at school, ask 37; otherwise, no more questions) WHAT ARRANGEMENTS { DOES USUALLY MAKE } FOR MINDING { WOULD MAKE } (names of children 4-11 at school) AFTER SCHOOL UNTIL..... ARRIVES HOME FROM WORK? Works during school hours, at night .. <input type="checkbox"/> 1 Father at home .. <input type="checkbox"/> 2 Other relatives at home .. <input type="checkbox"/> 3 Relatives, friends elsewhere .. <input type="checkbox"/> 4 No arrangements .. <input type="checkbox"/> 5 Other (Specify) .. <input type="checkbox"/> 6</p> <p>38. WHAT ARRANGEMENTS { DOES USUALLY MAKE } FOR MINDING { WOULD MAKE } (names of children 4-11 at school) DURING SCHOOL HOLIDAYS? Stops work, takes leave <input type="checkbox"/> 1 Works at night .. <input type="checkbox"/> 2 Relatives at home .. <input type="checkbox"/> 3 Relatives, friends elsewhere .. <input type="checkbox"/> 4 No arrangements .. <input type="checkbox"/> 5 Other (Specify) .. <input type="checkbox"/> 6</p>
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Labour force supplementary survey questions from May 1969: internal migration and child care.

implementation hurdles to cross such as the establishment of an area framework in a large, sparsely-settled country, the recruitment and training of a part-time interviewing staff and the establishment of regional management structure. (This latter undertaking was no small feat, as the ABS at that time was a loose amalgamation of State bureaucracies. Indeed, the structure set up by Foreman was the forerunner of the matrix management approach the ABS follows today.)'

Bill McLennan, 'A History of the Development of Statistical Methodology in the ABS', Inaugural Foreman Lecture, 9 July 1996.

From almost the very beginning supplementary questions were added to the survey. With ABS interviewers turning up to ask questions of 38 000 dwellings four times a year, it was simply too good an opportunity to miss. Other socioeconomic topics were regularly added to the labour force questions from the last quarter in 1961.

In 1978 the labour force survey moved from quarterly to monthly. At that time the Commonwealth government, on advice from the Hancock Review, decreed that this survey would provide the official measures for employment and unemployment from then on.

Until then the official measure of unemployment in Australia had been as measured by the Commonwealth Employment Service. Because this measure was based on the number of people registering as unemployed, it had been frequently impacted by changes to government policy and administrative changes, and was therefore not a reliable measure of unemployment levels. Furthermore, if there were backlogs in processing the registrations (as might be expected in times of high unemployment) this would also impact on the data.

The prime interest in the labour force survey came from the Commonwealth Treasury, as well as the business community concerned with labour market issues and monitoring the performance of the economy. Although the survey had relevance to social issues, it was largely viewed as an economic indicator.

At the beginning of the 1970s there was still not a great deal of effort put into social surveys concerned with other aspects of life such as health and welfare. This changed gradually in response to rising social concern with issues such as poverty, health, housing and education.

'... The Bureau of Census and Statistics is devoting an increasing effort to social statistics, and to social surveys in particular ... This trend marks a departure from the almost exclusive concern of official statistical offices during the 1930s, 40s and 50s when economic problems loomed large for most governments. There is now an increasing concern with more explicitly socially oriented issues, such as education, health, poverty, housing, and the environment. In examining the cause and extent of such problems, and in forming the necessary policies and programmes, statistics are recognised as essential.'

Ken Foreman, 'Social surveys in Australian government statistics', In *Symposium on Statistics and Social Problems*, Canberra, 1973.

Early Bureau social surveys focused on welfare issues in response to the needs of the Henderson Poverty Enquiry. The enquiry used a number of Bureau surveys including 'Experiences of Migrants' and 'Families receiving Social Security Benefits' which were run in 1973. However the Bureau's main contribution to the enquiry was a national income survey run in 1974.



The interviewer presents her ID to a respondent. This photograph is one of many taken in the early 1960s to promote to the public the Bureau's development of household and person-based surveys and use of trained interviewers.

AUSTRALIAN BUREAU OF STATISTICS NATIONAL ANTHEM POLL February 1974		Form Cc1a
Confidential		
1. SURVEY P.S.U. <input type="checkbox"/> BLOCK <input type="checkbox"/> DWELLING <input type="checkbox"/> PERSON NO. <input type="checkbox"/>	5. FIRSTLY, HAVE YOU HEARD THE TUNE OF ...	
2. NAME (optional) _____	(i) SONG OF AUSTRALIA? YES <input type="checkbox"/> 1 NO <input type="checkbox"/> 2	
3. SEX Male <input type="checkbox"/> 1 Female <input type="checkbox"/> 2	(ii) ADVANCE AUSTRALIA FAIR? YES <input type="checkbox"/> 1 NO <input type="checkbox"/> 2	
4. AGE Years <input type="text"/>	(iii) WALTZING MATILDA? YES <input type="checkbox"/> 1 NO <input type="checkbox"/> 2	
INTERVIEWER'S INTRODUCTION • The Prime Minister has announced that for certain occasions Australia should have its own National Anthem. • He has also said that "God Save the Queen" will still be used "on occasions when Her Majesty is present or when it is especially important to acknowledge our links with the Crown". • Three tunes have been selected as suitable for this new National Anthem and the Government is asking the people of Australia to choose the tune they prefer. I should now like to ask you some questions to obtain your opinion.	6. WHICH OF THESE THREE TUNES DO YOU PREFER FOR A NATIONAL ANTHEM? Song of Australia <input type="checkbox"/> 1 Advance Australia Fair <input type="checkbox"/> 2 Waltzing Matilda <input type="checkbox"/> 3 Other response (No opinion etc.) <input type="checkbox"/> 4	

The National Anthem poll

In the 1970s the Bureau was asked by the government of the day to conduct a poll to determine the Australian people's preference for the National Anthem to replace 'God save the Queen'. After considerable discussion over whether this was appropriate subject matter for the Bureau to involve itself in, the poll was conducted as a supplementary to the February 1974 labour force survey and covered around 60 000 people aged 18 years and over. The poll was expected to include a number of tunes including the best from a contest for composers to write a new National Anthem.

Questionnaire card from the National Anthem poll.

In the end, however, the compositions offered consisted of three well-known tunes, Advance Australia Fair, Waltzing Matilda and Song of Australia.

'We had interviewers whistling the tune at the doors.'

Col Proud interviewed in 2000.

Advance Australia Fair came out as the most popular in the survey and in the subsequent referendum. The rest is history.

Various government inquiries into specific social issues, most importantly those led by Professor RF Henderson on poverty, Dr WD Borrie on population size and growth, and Senator P Baume on health and welfare services in Australia, drove much of the social statistics development in the Bureau during the 1970s and early 1980s.

One of the key surveys first run in the 1970s was the household expenditure survey. Like the labour force survey it also had dual benefits. It was required for determining weights for the Consumer Price Index and it supported the work of welfare economists in describing the income and expenditure of Australian households.

Work on the design of a household expenditure survey first began in the late 1960s and several feasibility studies were deemed successful. However the resources required to conduct the survey were not immediately made available, and the first household expenditure survey was

not conducted until 1974–75. The first survey was based on a sample of 13 500 dwellings in the capital cities. In 1975–76 a second survey was conducted with a smaller sample size, but extended to include the whole of Australia. Since then they have been run on a fairly regular basis (1984, 1988–89, 1993–94, 1998–99).

Historically, information on personal or household wealth, income and expenditure has been among the most difficult to obtain, perhaps due to an attitude in the Australian community that this information is private and that requesting it is beyond the right of government. Nevertheless, the Bureau still obtains response rates, for household surveys, considerably higher than those obtained by most other national statistical agencies, even on income questions.

While these early surveys were significant, in the 1960s and 1970s household surveys still represented only a

small part of the Bureau's work in social statistics. The bulk of the social statistics work was based on data from administrative sources, particularly from registrars of vital events, hospitals, educational institutions and the courts. The collections were large, expensive and cumbersome because the Bureau undertook much of the collection and electronic capture of these data, as well as the collation, analysis and release.

'The task was onerous because to obtain the statistics [the] ABS was usually obliged to code, key in and edit every administrative record generated by the relevant departments or institutions. Often these records were bundles of actual administrative forms ... running to hundreds of thousands of pieces of paper passing through the ABS office each year.'

Mike Giles, 'A History of ABS Social Statistics from 1970', unpublished paper, 2003.

Stories of vicious dogs and lascivious respondents

Population survey interviewers represent one of the public faces of the Bureau. They meet and deal with respondents on a day to day basis. Like census collectors, the population survey interviewers have plenty of stories to tell of their brushes with people from all walks of life and how they react to an interviewer 'from the government'. Here are just a few:

'I was doing a monthly pop survey and was preparing my workload when I came across a household of five people – one lady in her 60s (the householder) and four young men in their early 20s. The relationship between the householder and the young fellows was described as "Stud" in each case. Wow, I thought I'm finally going to meet a real life Mae West! In my mind's eye I already saw a busty bottle blonde with a perfumed cigarette between carmined bee sting lips teetering around on impossible high heels. Sadly reality presented me with a chunky lady complete with hair rollers, saggy cardigan, apron and scuffed slippers. The "Stud" turned out to be an inventive prior interviewer's abbreviation for student.'

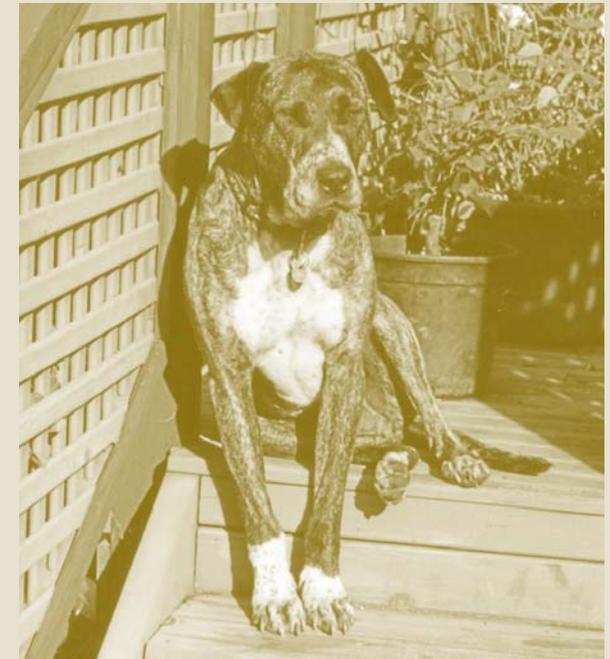
Ann Darbyshire, letter to ABS, 2003.

.....
'Some respondents liked to make things difficult, to discourage us no doubt. I remember one from ... who would only see me at 7.30 am knowing I lived 200 km away.'

Valerie Payne, letter to ABS, 2003.

'Up until the end of August 2002 I had been working for the ABS for seven years and had only experienced one uncomfortable experience with a dog. But in the seven-month period from August onwards I was bitten five times by dogs, mostly in remote areas. One attack (not in a remote area) was quite serious. There was a warning sign on the gate. However before entering there was no sign of the dog. But shortly after entering the property, a rather large dog appeared, latching itself onto my left elbow, vigorously yanking at it while I tried to free myself. After a few well-aimed blows at its nose with my trusty ABS folder it decided to release me so that I could beat a hasty retreat through the gate behind me. After receiving some treatment from the neighbour next door I returned home and completed another incident report.'

'A similar incident happened to my fellow interviewer ... whom I was working with in Port Hedland. While I sat in the vehicle outside this particular dwelling, [she] entered and knocked on the door. When she was halfway back to the front gate she was suddenly attacked by two very vicious Pit Bull Terriers. They had appeared from around the side of the house and without warning had started to attack her. As I went to help, [she] threw her ABS folder at the dogs, temporarily stopping their attack, allowing her to escape through the front gate. The next problem was that as she threw her folder several confidential documents scattered, they still lay on the driveway, being protected by two very possessive and vicious dogs. Obviously, being the conscientious interviewers we were, it was our duty to recover them. The plan was that while [she] teased the dogs from



outside the fence, luring them towards the side of the house, I was to enter the yard to try and recover the documents. Just as I was about to enter the yard, the owner of the house turned up, asking quite tersely, "What the hell do you think you're doing?" After a brief explanation she called the dogs who sedately followed her into the house while we recovered the documents.'

Allen Halden, personal comments, 2003.

'My most eventful time as an interviewer with the Australian Bureau of Statistics was when I went to the Eastern wheat belt of Western Australia just this side of the Rabbit Proof Fence. I came to a farm gate. All was well until it was time to close the gate (leave them as you find them is the rule). I pulled and heaved at this cocky's gate but to no avail. Then I realised I was being bitten severely and when I looked down I discovered I had been standing on a bull ants nest. By now they were fast approaching my waist. I forgot about the gate rule, clambered into my car and tore up to the house, raced through the yard to the bewildered looks from the kids playing there and yelled to the woman I encountered in the kitchen, "Quickly, quickly, I need to strip off. Where's your bathroom?" Strip off I did and after composing myself I looked down to see the beautifully white tiled bathroom covered with big black dead ants. I restored the room to its previously pristine state and sheepishly ventured out to the kitchen to explain my unusual behaviour. The farmer's wife was most amused and over a cup of tea asked what would I have done if it had been her husband at home and not her. She had already been on the two-way to her husband so it wasn't long before the whole district knew I was in the area and the reason for my visit. This worked in my favour as there is no mail delivery out there so they had no PAL advising them of their selection in the survey. I survived the day and the chuckles wherever I went.'

Lauren Stanes, personal comments, 2003.

'I was doing a monthly pop survey and interviewing a very flirtatious gentleman who lived alone. After successfully fending off various suggestions and innuendoes, I rose to leave. The house was of an unusual design and somewhat flustered I made my way to the front door. Or so I thought. In fact I marched briskly into his bedroom. And may I say marched even more briskly out of it!'

Ann Darbyshire, letter to ABS, 2003.

I could not find on Thursday a dwelling on my map,

But the owner of the property was a very helpful chap:

"Go through two gates and head on down towards that little light"

Not the best instructions in the dark, and late at night.

The light was from a candle, the whole place had just one

"Fear not," I told my worried self, "You're not too old to run."

In the gloom there I discovered two people on the floor.

I interviewed beside the candle with one eye on the door.

But really, they were pleasant folk, they just didn't live like me,

No one else that Thursday had offered me some tea.'

Gillian Montgomery, verse from 'My first ABS Survey, April 1983'.

'The house was without doubt the most dirty and neglected that I had ever been in. It was not possible to reach the front door to knock as there was a fierce three-legged dog barricaded into the verandah. From both the sight and smell, this was where the dog lived all the time. The barking did alert the female householder and I went in. The room I was invited into was literally covered in mattresses, cardboard boxes and other unidentifiable dusty pieces of furniture. The householder and her boarder had a chair each while I perched on a heap of mattresses. Yet despite the squalor, her boarder being an autistic young man and being on an invalid pension, the woman was the epitome of optimism. Not a whinge or a whine — she had enjoyed her life, was interested in world affairs, quietly confident in dealing with her boarder and totally oblivious to the shambles around her. Despite my hair and clothes stinking after the interview, I could not help but be deeply impressed with her spirit.'

Ann Darbyshire, letter to ABS, 2003.

'In the nineties we did a survey of mental health and wellbeing that asked questions about incidents that could have caused trauma, etc. We came back to Canberra for debriefing and started with a psychologist . . . the lad had us lie on the floor in a circle — a candle in the middle and music playing — holding hands with eyes closed while he talked about letting go of stress, etc. I opened my eyes to two faces looking in the window at us in utter amazement. The debriefing was worse than the interviews.'

Valerie Payne, letter to ABS, 2003.

Counting Darwin after Tracy

Glenn Cocking arrived in Darwin shortly after cyclone Tracy on Christmas Day 1974. He was one of the ABS staff sent to the battered city to reestablish the Bureau's statistical service. The office had gone from a staff of twelve to a staff of four after the cyclone. His first task was to provide a population count within two weeks.

'The authorities wanted the ABS to run a population count quickly, because they wanted to know how many people were in Darwin and whether they would fit into the remaining shelters. They were very conscious of making Darwin a safe place in case another cyclone came.'

The count found that around 11 000 people remained in Darwin compared with the pre-cyclone total of well over 40 000.

Because the local authorities needed to keep track of the number of people in Darwin, the Bureau established a system of cards to be completed by everyone leaving and arriving. Bureau employees staffed the airport, the wharves and even the Stuart Highway, to ensure that all travellers completed the cards.

'We used to update the population daily – we'd count the in-forms and the out-forms and adjust the total and send the detailed

forms off to ... Canberra which produced the detailed tables about the population.

'I also remember appearing on the TV news with a naively prepared cardboard graph three feet wide which illustrated the population growth during the first few months after the cyclone and which the camera had to pan across to show it a piece at a time. (If ABS ran media training courses in the early 70s, I certainly missed them.)'

Glenn Cocking (Acting Chief Statistical Officer, Darwin – 1974), personal comments, 2000.

Lister Hopkins was recruited to the Bureau in 1951 after working in several international agencies and as a UN expert adviser in population and vital statistics. Through the 1950s, 1960s and 1970s he played a significant role in developing the Bureau's demographic and social data.

The 1970s in particular were a period of development in demographic statistics. The National Population Inquiry headed by Dr WD Borrie had a fundamental impact on the Bureau as it promoted the expansion of the Bureau's demography area. The Bureau began to focus on improving the quality of the demographic statistics it released, including significant improvements to the population estimates so that they measured residents (i.e. the population who usually live in Australia rather than those who are present at a given point in time), and the development of population projections.

The impact of conducting social surveys on the staff of the Bureau

The start of household surveys in the Bureau also marked the start of a more intimate understanding of the lives of other Australians, for those who worked in the Bureau. One staff member recalled that those working on the surveys for the Henderson Poverty Inquiry 'were profoundly affected by the plight of some of the families surveyed'. In particular he remembered another staff member sending toys to one family anonymously in response to the poverty they found as they conducted interview tests for a survey.

Meeting respondents face-to-face in interview tests and follow-up was used as a training tool for many graduates entering the Bureau in this period. It is likely that this sort of first hand experience of the lives of Australians from all walks of life fuelled the interest of Bureau staff in improving the depth of social statistics available.

The social indicators movement and social reporting

In the 1960s there were increasing moves internationally to come to grips with the scope of social statistics and how summary measures might best be constructed and presented to inform various social issues. The cooperative work of national and international agencies in establishing the System of the National Accounts for economic statistics provided a reference point. This naturally led to attempts to produce 'social accounts' based on the framework of the national accounts. The work 'Towards A System of Social and Demographic Statistics' was such a framework. It was sponsored by the United Nations and was initially considered as a system that the Bureau could use to develop Australian social statistics. However the Bureau found it too complex. Rather what was needed was:

'... a system that helped us to understand the wellbeing of people and the factors that improved or worsened the conditions of individuals in society. We were looking for a system that focused our belief in the rights of people to lead a full and meaningful life.'

ABS, A Guide to Australian Social Statistics, 1992.

At the beginning of the 1970s the OECD established its Social Indicator Development Programme. The starting point was the concept of social wellbeing. Over the next decade it developed in three phases. Phase one identified nine areas of concern. These remain very similar to the areas of concern in the Bureau's wellbeing framework today.

The Bureau was interested in the OECD program from its outset, but it was difficult to find resources to get the momentum going. In 1973 the Canberra branch of the Australian Statistical Society organised a three day symposium on Statistics and Social Problems at which a large proportion of the speakers were from the Bureau. The Commonwealth Statistician Jack O'Neill opened the symposium and included the following comments.

'Social statistics are probably at the same stage of development as economic statistics were 30 to 40 years ago. The reason for this is not hard to find when we recall the world-wide preoccupation with economic problems during this period.'

'Official statistical offices were naturally involved in much of the work required to support economic policy making since the end of the Second World War. In Australia, considerable advances were made in economic statistics ... But this necessarily meant a much slower rate of development of social statistics. Furthermore I must make it clear that the demand for important economic statistics ... continues unabated.'

'I am most interested in the work being done by the OECD in identifying social concerns as a first step towards the development of appropriate basic statistics and indicators.'

ABS, 'Opening address of Mr JP O'Neill, Commonwealth Statistician, at the symposium on statistics and social problems', at Canberra 4 July 1973, unpublished paper.

Phase Two of the OECD program was to develop social indicators as ways of measuring these nine areas of concern. In Australia the first *Social Indicators* marked the first time that carefully selected statistics taken from various sources, and covering a wide range of topics, were brought together in a single report with the specific purpose of assessing and analysing key social issues in Australia. A notable feature of the report was that the statistics were primarily presented as rates, percentages, averages, etc. rather than absolute measures, as was generally done in other statistical publications of the time. However, beyond the occasional note at the bottom of a table there was no explanation of what the numbers showed or how they might inform debate on particular issues. The second *Social Indicators*, released in 1978, was almost twice as long and included more notes and even some graphs. The third, released in 1981, for the first time provided explanations and links between the tables of statistics.

'The emergence of national social reporting has been closely associated with the development of social indicators. Publications in this series owe their title to this association. However, it will be apparent to the reader who is familiar with social indicators literature that many of the statistics ... would not be generally accepted as social indicators. Statistics describing institutional inputs are, for example, not normally afforded that status. There is nevertheless an acceptance, now evident in the social reports of many countries, that these and other social statistics are important ingredients for a social report.'

ABS, *Social Indicators* No. 3 1980.

Mike Giles and the development of Social Statistics in the Bureau

One of the key architects in the development of social statistics within the Bureau was Mike Giles.

'Mike Giles deserves a good deal of credit for where we went in social statistics. Under his guidance we started a number of surveys in that area...'

Fred Bagley interviewed in 2000.

During the 1960s Giles spent considerable time working in the census area, and through that he gained an appreciation of both the need for social statistics to determine and measure social concerns and the lack of comparable statistics at that time. Not only was there a dearth of social statistics, but there was a lack of statistical standards and classifications that would allow comparable statistics to be produced. However, by the early 1970s the focus of many of the international statistical agencies was beginning to turn to social statistics. From within the Bureau Mike Giles was agitating for Australia to also have a greater focus on these statistics. In particular he was keen to undertake the development of 'social indicators'.

The 1976 reorganisation of the Bureau formalised social statistics at the branch level for the first time. Giles, the first head of the branch, described that time

as the start of the sense within the Bureau that social statistics could be a body of data and that, viewed together, such statistics could tell us about the wellbeing of Australians. In the same year the ABS released Australia's first *Social Indicators* publication. While the Bureau was unable to provide many of the recommended indicators from the data available at the time, the desire to fill such a publication with real indicators, rather than institutional input data, was one of the catalysts for the development of social surveys within the Bureau.

Mike Giles remained a significant influence on the development of social statistics in the ABS. He led a review of the social statistics program in the late 1980s and in the 1990s he was the author of *A Guide to Australian Social Statistics*, which was the Bureau's first attempt at articulating a comprehensive system for social statistics. This work was a critical step in the development of the Bureau's framework for social statistics *Measuring Wellbeing* which was released in 2001. Again Giles played a part in its development, working as a consultant with the project team despite retiring from the Bureau some years before.

The fourth *Social Indicators* was released in 1984, at a time when international activity in social indicator development was being sharply curtailed after considerable expansion in the 1970s. Phase Three of the OECD program required that countries fundamentally upgrade their social survey programs, and most simply did not have the resources for new collections. Unlike many other national statistical agencies, the ABS did expand its social survey program in the 1980s, but not necessarily to feed into social indicators. The main difficulty for the Bureau was that the design of *Social Indicators* (a comprehensive social report which had to include the latest data) was unable to keep up with the ever expanding set of data available from the Bureau's social surveys. It was to be eight years before the next and final *Social Indicators* was released in 1992. It was subsequently replaced by *Australian Social Trends*.

However the Bureau was moving ahead on other fronts, beginning to produce social atlases and thematic reports on a range of issues. It became increasingly concerned with analysis of the data presented. Between 1984 and 1992 the Bureau released 10 social reports, based on data from the 1986 census, which focused on particular topics of social concern, as well as other social reports. Even the summaries of findings in collection-based publications were expanded to include more analysis.

The social analysis undertaken in the Bureau in the 1970s and 1980s led to an increased demand for comparable time series as well as for comparable data across different surveys. This demand led to a significant focus in the Bureau on standards and classifications for social statistics.

Development of standards and classifications

The Bureau has always relied on classifications to organise data. The key social classification is occupation, which has a long history back to colonial statistics. For the 1901 census the colonies agreed to use a single classification. Since then the regular advent of the census ensured that the Bureau periodically updated the occupation classification. However many government departments also needed to classify occupation and they were using different classifications and obtaining results that were not comparable. The Crisp Enquiry of 1974 identified these problems, and that departments were not prepared to use the ABS classification despite its comparability with the international classification, because it was too broad and lacked the necessary detail for Australian circumstances. In the late 1970s the Bureau commenced work on an occupation classification that could be used by all government bodies in Australia. The Australian Standard Classification for Occupation (ASCO) was first released in 1986. For the first time occupation was classified according to skill level and skill specialisation rather than linking occupation to industry groupings. An ABS staff member, Dr Brian Embury, then assisted the International Labour Organization in developing the 3rd edition of the *International Standard Classification of Occupations*

1988, along the same lines. In the 1990s the Bureau developed several other social classifications that were designed specifically for use both in the Bureau and beyond.

Standards in social statistics are more recent phenomena than classifications. Since the 1960s the Bureau has been participating in the international development of social statistics standards. In the early 1960s Keith Watson and Mike Giles of the Bureau developed one of the first internationally recognised concepts and definitions of 'household' and 'family'. Prior to that time surveys and censuses had collected information on households (which were often called 'families'), but did not collect data specifically about families.

Nevertheless, in the early days of the development of social surveys in the Bureau their development was ad hoc, responding to specific needs and with little reference to how information had been collected in other surveys. While two surveys might collect similar information, they would each independently develop their own particular questions to collect the information, and their own output data items. As a consequence they often released very different results. This made it difficult for analysts to compare data from

different collections. Even where classifications existed, the question modules and coding rules could differ from survey to survey.

By the start of the 1990s it was clear that greater uniformity was needed when particular data items were being collected in different surveys. Changes in technology meant that it was increasingly easy for data from different sources to be used together. A system that would produce uniformity quickly was required, so work was undertaken to develop a set of core standards. By April 1993 the *Directory of Concepts and Standards for Social, Labour and Demographic Statistics* was released internally. It contained standards for nine basic concepts, and within one year this was expanded to fifteen concepts. For each concept it included, not just a definition and classification, but also a coding structure, input and output categories, and a standard question module. From this time on, standards were more rigorously enforced for Bureau collections, and comparisons of results from different surveys gained greater validity. Today standards developed for ABS household surveys are used by many organisations.

The rise and rise of social surveys

Social and political changes in the 1970s in Australia led to a growth in demand for social statistics. Changes to the government's social programs introduced during the Whitlam era (1972–1975) were important in extending demand for social statistics and research.

In 1979 the Baume Inquiry Through a Glass, Darkly, which evaluated health and welfare services in Australia, found that:

'While the Australian Bureau of Statistics is the major collector of statistics for the health and welfare system, it devotes an inappropriately small amount of its budget to the production of these statistics ... The vast preponderance of ABS statistics result from the development of Keynesian and neo-Keynesian models and reflect the greater pressure put on the Bureau for the production of economic statistics. While this development may have been understandable at one time, it is now totally inappropriate that such meagre attention is paid to measuring the impact of 37% ... of Commonwealth expenditure.'

Senate Standing Committee on Social Welfare, *Through a Glass, Darkly: Evaluation in Australian Health and Welfare Services*, Vol. 1, AGPS, 1979.

And it recommended:

'That the Commonwealth Government direct the Australian Bureau of Statistics to raise to an appropriate level the proportion of its budget spent specifically on health and welfare statistics.'

Senate Standing Committee on Social Welfare, *Through a Glass, Darkly: Evaluation in Australian Health and Welfare Services*, Vol. 1, AGPS, 1979.

This was a catalyst for redirecting funds to enable the establishment of a more extensive program of social surveys. However the support for social surveys within the Bureau was still demand-driven, rather than based on a desire to implement a theoretical framework for social statistics. While some in the Bureau saw a need for a core set of surveys to be run on a regular cycle and on a permanent basis, this was not a commitment that the Bureau was prepared to make at that time. Surveys tended to be based on specific requests from departmental clients. However in practice federal and state departments tended to request and receive surveys from the Bureau on a semi-regular basis.

By the late 1980s around 20 regular supplementary surveys were conducted with the labour force survey. By the late 1990s there were over 30. There have also been a large number of state or territory specific supplementary surveys over the decades.

Between 1981 and 1983 several other labour related surveys run by the Bureau were subject to significant changes. Those surveys, which previously had been based on payroll tax returns, were redeveloped as sample business surveys based on the ABS business register. The surveys that underwent this change included average weekly earnings, the survey of employee earnings and hours (previously known as the civilian employees series) and the job vacancies survey.

While the 1980s saw the rise of social surveys, social collections captured from administrative processes were gradually handed back to their administering departments. These compilation tasks had traditionally fallen to the Bureau partly because it was the only agency to have the technology (first punch card systems, then

computers) to process the bulk forms. However by the 1970s most departments were acquiring their own computer systems. In 1982 the ABS announced its new policy for administrative by-product statistics, that:

'... as from some future date, to be negotiated case by case, these three activities (i.e. coding, data capture and editing) should be undertaken by the administering authority.'

Roy Cameron, 'The ABS Administrative By-product Policy', unpublished paper, 1982.

The policy of handing the administrative collections back to the administering authorities provided significant resources for the development of household surveys as well as other programs within the Bureau. However the move was not necessarily appreciated by many of the authorities at the time, most of which were in state governments. They had come to believe that such processing was part of the role of a national statistical agency.

One of the outcomes of this change was that it provided the opportunity for the state offices to take on more specialist roles, since most of the processing of the administrative collections had been done in those offices. In particular, state offices developed their social statistics through dissecting the national social survey results to produce state data and analyses, as well as by running state supplementary surveys.

Developments in survey interviewing

In the 1960s all surveys were done by face-to-face interviewing. However over time other options were tested. Mail out and/or mail back, similar to what was undertaken for many economic surveys, was investigated in the 1970s, but for personal surveys it was found to produce data of insufficient quality. However it was used if respondents objected to an interviewer turning up every month. The full questionnaire could not be sent out, but responses to a few key questions were found to be sufficiently reliable if collected in this way.

In 1986 telephone interviewing was investigated. Initially there were concerns that not enough people had access to a telephone. But primarily the investigations suggested that there were some concerns relating to the possibility of a significant shift in the unemployment series with higher levels of unemployment reported through telephone interviewing compared with personal interview techniques. It was retested in the 1990s, and from 1994 telephone interviewing was gradually introduced to the labour force survey. From 1996 it came to be used for all but the first month of the labour force survey. It was also possible to use it as an option for completing other household surveys in situations where face-to-face interviews were difficult to arrange.

Almost as soon as portable computers such as laptops came into Australia, the opportunities for computer assisted interviewing began to be investigated. This had the potential not only to make the interview quicker and less of a burden on the respondent but also to reduce the chances of error by the interviewer, and even to start the process of editing the data as they were collected from the respondent. It was trialled in various tests through



the 1990s, but was first used in the 1996 survey of employment and unemployment patterns. However it was not implemented in the labour force survey until 2003. Today almost all social surveys use computer assisted interviewing.

Above: Face-to-face interviewing of householders began in the 1960s.

Microdata

The Census and Statistics Act has always contained stringent provisions designed to protect the confidentiality of all information furnished under the Act while still imposing on the Statistician an obligation to compile and publish statistical summaries.

Through the 1970s and early 1980s there was significant re-examination of the role and structure of the Bureau and its supporting legislation, which resulted in substantial amendments to the Census and Statistics Act in 1981. These provided for the Bureau to release detailed microdata, which were known as unit record data.

In social research it is often difficult to determine exactly which combinations of data items will be required in various tables. Clients would often need to request large slabs of tables, then ask for more tables with different combinations of data items. This was time-consuming for both the client and the Bureau, and often meant that the client could never be fully satisfied. It was also difficult for clients to analyse data fully without access to the complete survey records.

In 1985 for the first time the Bureau released a confidentialised unit record file for the health survey. This was a file containing many of the details collected from the survey, but produced in a way which ensured that it would be impossible to identify individuals from the data.

Recognising the particular difficulties involved in assuring the confidentiality of unit record files released under authority of the determination, the Microdata Review Panel was established within the Bureau in 1986 to assess each confidentialised unit record file in terms of the adequacy of the steps taken to ensure that information relating to all individuals remains confidential.

In the long term access to confidentialised unit record files had a fundamental impact on the release of social statistics to key clients. However it took a while for both the Bureau and its clients to grasp the full potential of these files.

‘Although those changes at that time enabled the release of the unit record files ... it was many years before really they started to get picked up by any users. Initially a couple of academics, a few researchers and a couple of departments around Australia would get hold of them, but in the main it was a few university specialists. They were putting them to good use, but with very few exceptions, Commonwealth and state agencies didn't exploit them. Some who were taking them off us were using them to produce tables which we could do for them, probably more efficiently if the truth be known.’

Tim Skinner, interviewed in 2002.

One of the main reasons why the unit record files were not used more at first was the high cost. This was a particular problem for academics. An agreement between the ABS and the Australian Vice Chancellors' Committee (AVCC) was signed in 1998 under which confidentialised unit record files, covering most of the key ABS social and labour household surveys, were made available for research and teaching purposes to Australian universities at a fixed cost per year. This allowed academics all over Australia unlimited access to confidentialised data from a wide variety of surveys, and increased the use of the Bureau's data significantly.

In more recent times, the Remote Access Data Laboratory was launched, and other access methods are under development.

The rise of analysis in social statistics

Apart from demographic analysis which had been undertaken in the Bureau since the time of Knibbs, the first major technical analysis project undertaken in social statistics was the Fiscal Incidence study undertaken under the direction of Ian Castles. It was published as *The Effects of Government Benefits and Taxes on Household Income*. This study took into account the elements of indirect taxes (such as sales tax) and government non-cash benefits (e.g. health and education services) as well as the more usual direct benefits and taxes. It used this information to determine the level of income redistribution through our society. The innovative work was first done based on the 1984 household expenditure survey, and has been repeated for each of the household expenditure surveys run since.

Rethinking social statistics

In more recent times a desire to understand the nature and extent of social change in Australia, coupled with the ongoing need to assess the effectiveness of government programs and to support policy development, has driven the rapid expansion of social statistics. The quality of the surveys improved, as did the depth of subject matter covered.

The primary focus of social statisticians in the Bureau in the 1990s was on ensuring that the statistics produced were useful, on identifying and filling gaps in the program, and on explaining how social statistics could be used as an integrated set which together measured the wellbeing of Australians.

In 1990 the ABS undertook its first major review of social and labour statistics. For the first time the Bureau clearly accepted that social and labour statistics were a body of statistics, and that together they played a crucial role in informing governments and the public on the wellbeing of the nation. The review provided a clear understanding of what were core statistics and how frequently they were required.

The review divided the statistics into the nine areas of social concern and focused on special population groups. Although it was not cloaked in such terminology, this review amounted to an outline of a framework for social statistics for Australia, and the construction of what today we refer to as information development plans.

Following on from this was the production of *A Guide to Australian Social Statistics*, the Bureau's first formal attempt to elucidate the Australian social statistics framework. It explained how the available social statistics linked together and identified gaps in the available information. It also described the statistical frameworks



Tim Skinner, First Assistant Statistician, Social and Labour Division 1987–1995, then Deputy Australian Statistician for the Population Statistics Group, 1995–2002.

within each of the nine areas of concern. On this basis, individual sections within the Bureau concerned with particular topic areas began to develop more detailed statistical frameworks. In 2001 the frameworks were collated, reviewed and expanded in the publication *Measuring Wellbeing: Frameworks for Australian Social Statistics*.

Recent progress in population statistics

The 1990s heralded an era of innovation in survey content and design in the Bureau. Some surveys were unusual for their controversial or difficult subject matter, some because of the personal nature of the responses required from participants, others because of their unusual survey methodology.

During the 1990s the Bureau began to focus more strongly on international relationships in the social and population statistics area. In particular in 1996 the Bureau organised a meeting of experts to further the development of statistics on household economic wellbeing. This was a response to a belief that while many countries were making advances in income statistics, they were also encountering common problems. The group met first in Canberra and consequently is now known as the Canberra Group. Despite this group obtaining some very useful and tangible outputs to support international standards more generally, international standards for social statistics remain not as well developed as for economic statistics.

Internally, social and population statistics underwent a major restructure in the late 1990s. Because it could be five to ten years between survey cycles, it was difficult to maintain expertise in survey management within some subject matter areas. So those areas were split into separate components. Management of individual surveys was siphoned off into three special Household Survey Management Units which undertake surveys, leaving the subject matter areas to further develop their expertise in their subject.

Innovative surveys of the 1990s

TIME USE SURVEY 1992

This survey involved the participants completing a diary of how they spent their time on two successive days. Conduct of such a survey was a recommendation of the House of Representatives Standing Committee on Legal and Constitutional Affairs in its Inquiry into Equal Opportunity and Equal Status for Women. The thrust of the recommendation was to survey the extent of unpaid work undertaken in the community. However the survey not only captures unpaid work, but the minute details of how Australians spend their time.

The time use survey is now part of the regular cycle of social surveys and is regarded as the standard for time use surveys internationally.

SURVEY OF EMPLOYMENT AND UNEMPLOYMENT PATTERNS 1995–1997

In 1994 the government was concerned about the situation of the long-term unemployed and that they were not able to participate in employment growth, essentially becoming a sub-culture that was 'unemployable'. The survey of employment and unemployment patterns was designed to assess this situation as well as to evaluate government programs established to overcome it.

This survey was the first longitudinal survey to be undertaken in the Bureau. It followed the circumstances of long-term unemployed people over a three year period. It was innovative for the Bureau, not just because it was longitudinal, but also because the

.45	Paid for pizza	Family			Delivery person and family
.50	Ate dinner	Self	Talked to family		Family
.55					
7.00					
.05					
.10					
.15	Stacked dishwasher	Family			
.20	Got kids ready for bed	Children	Talked to children		
.25	Read children a story		Nothing		
.30					
.35					
.40	Filled in diary	Community	Talked to partner about Neighbourhood		
.45					
.50	Watched TV	Self	Watch meeting		

An example page from a time use diary.

data collected from the interview were supplemented with administrative information on the individual's access to income support and labour market programs. This survey was also the first to use computer assisted interview techniques.

WOMEN'S SAFETY SURVEY 1996

This survey was one of the more controversial undertaken in the Bureau. It was subject to comment in the media before the survey was even in the field. The fact that the ABS was running a survey on this subject seemed to evoke strong reactions and views. Even internally it became, for a short time, subject to much discussion among staff who had nothing to do with the actual survey. However, by the time the survey results were released, most of the controversy had passed and the media discussed the results more dispassionately.

It estimated, for the first time, high quality benchmarks of the extent of domestic violence against women in Australia. It involved asking questions of women about how safe they felt, followed by questions on whether they had ever been subject to violence or aggression by men or women.

The survey was voluntary, yet it obtained a 78% response rate. The interviewers reported that for some it was the first and, perhaps, only occasion in which women disclosed to anyone that they had

been or were currently subject to violence. Most women who had experienced violence appeared to welcome the opportunity to tell their story in the hope it would help other women in the same or similar situation.

SURVEY OF ASPECTS OF LITERACY 1996

The Survey of Aspects of Literacy represented the first time the Bureau was involved in an international survey. It involved the usual personal interview in which socio-demographic characteristics and other background information was collected. However this was followed by the respondents undertaking a set of tasks that provided an objective assessment of some aspects of their English literacy and numeracy skills.

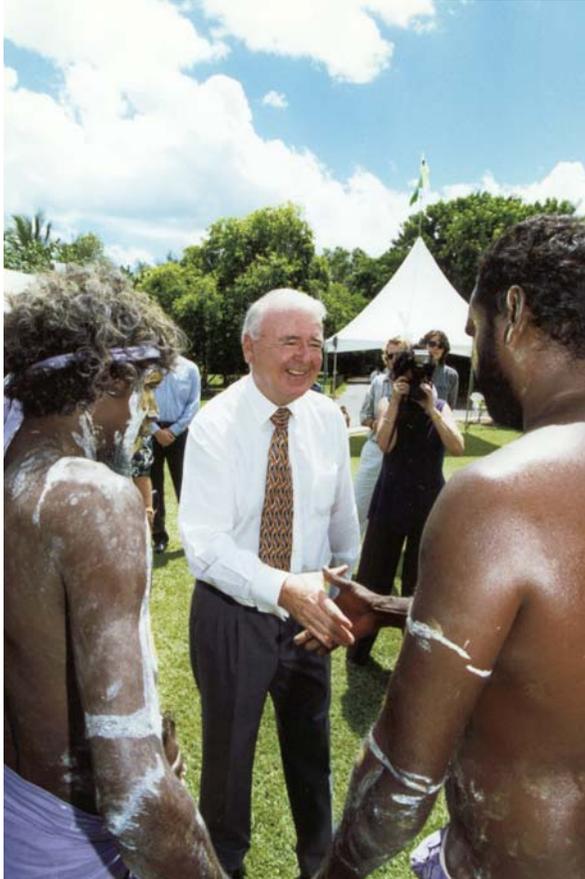
The survey methodology was developed originally by Statistics Canada and a private United States organisation as a tool that would produce valid results across different countries.

SURVEY OF MENTAL HEALTH AND WELLBEING 1997

In December 1994 a workshop commissioned by the then Commonwealth Department of Health and Family Services recommended the conduct of a national survey of mental health and wellbeing. The survey was to comprise three components: an adult study, a child and adolescent study, and a study of low prevalence (psychotic) disorders.

Subsequently, as part of the National Mental Health Strategy, the Department commissioned the ABS to conduct the adult component of the survey. This survey was unusual in that it attempted to diagnose mental illness based on a survey questionnaire.

The survey was subject to various ethical issues, including whether the topic was too sensitive for the government to be asking it of its citizens in the first place. It was a voluntary survey, and also received a response rate of 78%.



Sir William Deane at the launch of *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples*, 1997.

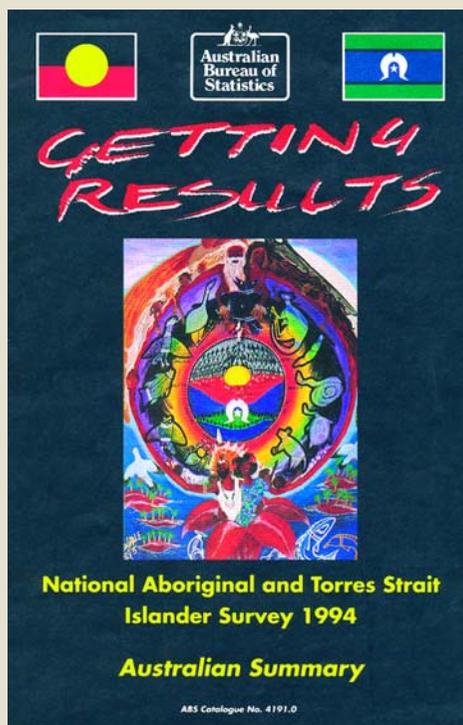
The Bureau also began to seriously consider its statistical leadership role in relation to social issues. National centres were established based on the findings of this review, which took on the responsibility for servicing a particular field of statistics irrespective of their source (ABS or non-ABS). The national centres were usually set up in particular state offices. The first national centre, crime and justice statistics, was established in the Victorian state office. Subsequently national centres were established for Aboriginal and Torres Strait Islander statistics, culture and recreation statistics, rural and regional statistics and education and training statistics. Also the existing social subject matter areas in the Bureau were required to become 'experts' in all the statistics in their field of concern, and no longer just managing particular collections.

One of the review's other key recommendations was the development of an annual social indicators publication. In May 1994 *Australian Social Trends* was released with the aim to '...monitor changes in Australian social conditions over time'. This innovative design drew on the style of publications such as the annual British publication *Social Trends* and the quarterly publication *Canadian Social Trends*. But the annual format, combined with indicator tables and the article-based structure, was unique. When it was released it was warmly welcomed, particularly by the Australian media, which saw it as a significant resource.

Identifying relationships

Australia was one of the first countries to drop the concept 'head of household' and instead allow 'any responsible adult' to answer questions and be placed as 'Person 1' on forms. While in part it clearly reflected changing social values, to some extent the concept of a 'household head' was always the butt of jokes in Australia (see chapter 5).

Australia was also one of the first countries to recognise that relationships were not always identifiable from a question on marital status. To help with identification of families, the Bureau developed a relationship data item. The resulting question determined partnerships irrespective of whether their marital status was married, widowed or divorced. It also allowed data on same-sex couples to be collected for the first time.



Detail from the cover of the Australian summary information from the 1994 National Aboriginal and Torres Strait Islander Survey.

Indigenous statistics and social surveys

The Aboriginal Statistics Unit was first established in the Bureau's central office in 1985 as the result of a groundswell of demand for more accurate data in the early 1980s. The unit acted as a focus for Indigenous issues throughout the Bureau. The unit's work initially involved working with the population census area to improve enumeration strategies and in analysis of census results. The other key focus was on improvements to Indigenous identification in administrative data. At that time the unit was mainly concerned with improving Indigenous identification in vital statistics (registrations of births, deaths and marriages). Later this widened to pursuing Indigenous identification issues in other administrative records.

In 1990 the unit moved to the Darwin office of the Bureau. It continued to evolve and expand, undergoing several name changes and increases in resourcing.

In 1992 it was announced that the ABS would begin to develop a National Aboriginal and Torres Strait Islander Survey. The survey, which was conducted in response to a recommendation by the Royal Commission into Aboriginal Deaths in Custody, aimed to provide comprehensive national information on a range of topics relevant to Aboriginal and Torres Strait Islander peoples. The Royal Commission had highlighted the inadequacy of existing statistical information for monitoring the wider social and economic experience of Indigenous people. The survey was in the field in 1994 and the first results were released in 1995. Information from this survey continued to be released and analysed for several years. The survey was also the catalyst for other work in the Bureau, including development of a classification of Indigenous languages.

In 1996 the Indigenous unit became the National Centre for Aboriginal and Torres Strait Islander Statistics (NCATSIS), still based in Darwin. The work and products developed by the national centre have continued to grow. In particular the publication of *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples, 1997* (in conjunction with the Australian Institute of Health and Welfare) was considered a milestone as a comprehensive overview of the health and welfare of these two population groups. It was launched by the then Governor-General, Sir William Deane, and has been released biennially since then.

In 2000 a paper *Directions in Aboriginal and Torres Strait Islander Statistics* was released which established a framework and strategy for developing Indigenous statistics into the future. In particular it highlighted the need for NCATSIS to take a strong national leadership and coordination role within the Bureau in this field.

Statistics on women

In 1993 the Bureau released its first publication about women, *Women in Australia*. It quickly became known as the 'pink book', much to the embarrassment of the author area. A pleasant purple shade had been chosen for the cover, but at that time identifying exact colours was difficult and the printed version came out looking rather pink. However the content of the publication was heralded. The dot point format made it particularly popular with the media, which used its content for 'filler stories' for weeks after. And when they had finished with the information on women, some newspapers then realised that they could also use the same information to talk about men.

In the following year the Bureau released two further publications about women. *Women's Health* was a comprehensive publication detailing the health of women in Australia. Then late in 1994 the first *Australian Women's Year Book* was released. The ABS and the Office of the Status of Women published it jointly. It combined statistical analysis with discussions of policy and government actions in relation to women's issues. A unit set up in the Bureau, and jointly funded by the Bureau and the Office of the Status of Women, undertook the analysis. The publication was planned as an annual publication and so was released again in 1995. A similar one-off publication *Women in New South Wales* was released in conjunction with the NSW Ministry for the Status and Advancement of Women in 1995. The last *Australian Women's Year Book* was released in 1997. All three editions of the Year Book included works by Australian women artists.



The 1994, 1995 and 1997 Australian Women's Year Books.

In 1999 a second review of the Household Survey Program was undertaken. Among other things this led to an ongoing cycle of surveys which the ABS has committed to running on a regular basis. The overall program consists of the following elements:

- Monthly labour force and supplementary surveys
- Special social surveys
- General social survey
- Indigenous general social survey
- Multi-purpose household survey.

As they have been in the past, the supplementary surveys to the monthly labour force survey continue to be most suited to simple topics that have some relationship to labour force. They continue to have regular survey topics, but the monthly cycle also allows some flexibility so that new or one off topics may be run through this vehicle. The review made few changes to the supplementary system.

The special social surveys have gained the most out of the review, as it was recommended that more topics be allocated regular slots in the program. The topics subject to this recommendation were: disability, ageing and carers; health; education and training; income and housing costs; household expenditure; retirement provision and superannuation; time use; crime and safety; and violence against persons.

The most innovative concept in surveys coming from the 1999 review harks back to the early days of social surveys in the Bureau. A general social survey (similar in name, but not content, to the one first run in 1975) will be conducted regularly to obtain broad information across all areas of social concern. The content of each survey will be largely fixed (although it can be expected to evolve over time), but with some capacity in each survey to include items relating to contemporary or emerging issues. This will facilitate monitoring of social change over time.

The Bureau also decided to establish a multi-purpose survey vehicle that could pick up a number of the topics that require personal and/or face to face interviewing and are therefore unsuited to the monthly supplementary survey program. The multi-purpose household survey will run in those years when a general social survey is not in the field.

Another major outcome of the review was to establish Indigenous issues as a priority for the social survey program. This meant running Indigenous surveys on a regular basis, usually in conjunction with a similar survey of the wider community, e.g. an Indigenous health survey alongside the health special social survey. A key element of this was to run an Indigenous general social survey with every second general social survey.

An outcome of the 1999 review was to give stability to the social statistics work program, and to give clients confidence that they would be able to continue accessing appropriate data in the areas of greatest need. At the same time the review provided flexibility in the program to enable the Bureau to meet emerging data requirements.

In 2001 the ABS released *Measuring Wellbeing* which outlined a framework for all Australian social statistics. Some of the most recent work undertaken by the Bureau has included attempts to identify, understand and measure social capital. The Bureau has been involved in national and international discussions about this issue. In 2004 it released an information paper outlining a framework and recommending some indicators. Also in 2004 the results of the first general social survey were released. They included some data on social attachment and community support.



John Carroll and Ritchie Barnard, undertaking block listing on a field trip in 1962.

Far right: Detail from a book of logarithmic tables (EE Scott, *Tables of Logarithms and Anti-Logarithms*). Such books were used as tools in the statistical trade prior to the introduction of scientific calculators.

Working smarter
METHODOLOGY

chapter seven



The significance of methodology to the Bureau

To remain relevant and efficient, a statistical agency must keep abreast of current and possible future statistical techniques and efficiencies in production. It must produce statistics that are of good quality and fit for the purposes for which they are intended. It must satisfy the changing requirements of its clients regarding range and quality of the statistics it produces. It must be mindful of statistical obligations to international agencies, and the compatibility of its own statistics with those for other nations. For all these reasons, methodology is of great importance in a statistical agency.

The Bureau has a long history of commitment to research and methodology. This is in no small part attributable to the efforts of many statistical officers in pursuit of excellence, and none more so than Ken Foreman who led the widespread introduction of mathematical statistical methods, especially sample surveys, to the work of the Bureau.

'Ken Foreman was undoubtedly the father of statistical methods at the ABS. He was the leader of the first methodology unit and continued to foster, expand and lead it (at increasingly more senior levels) until his retirement from the ABS on 21 September 1984, but for the last year when he was an Australian Public Service Research Fellow at the Australian National University.'

Bill McLennan, 'A History of the Development of Statistical Methodology in the ABS', Inaugural Foreman Lecture, 9 July 1996.

One of the reasons for this success has been the close alignment between the Bureau's statistical and methodological areas. This was fundamental to the way Ken Foreman wanted to work. In his words:



'... the application of mathematical statistics techniques to an increasing range of the Bureau's operations has resulted in many notable innovations which, in total, have significantly altered the Bureau's capabilities and economics.'

Ken Foreman, 'History of Development & Coordination Division', unpublished paper, 1977.

This approach has also been followed by his successors.

The main landmarks in the history of methodological developments in the Bureau are the subject of this chapter.

Above: Ken Foreman headed the first methodological unit in the Bureau. His work led to the widespread use of sample survey methods throughout the Bureau's collections. In the 1960s the Bureau was asked to provide assistance to the Papua New Guinea Statistical Office. In a country as isolated as Papua New Guinea it was all but impossible to use pure census methods effectively. Ken Foreman's involvement led to sampling techniques being used with good results in that country also.

Early methodologists

In outlining the statistical relationship between the Commonwealth and the states, Knibbs explained that, although activities continued along the lines agreed at the 1906 Conference of Statisticians, he soon found it necessary for the Commonwealth Bureau to take over some original compilations, and to develop some new ones.

Statistics for a changing world

'Throughout the world, social and economic changes are so rapid that their accurate statistical measurement becomes increasingly important . . . To accurately appreciate the magnitude of the dynamic force of economic changes, and to forecast the consequences of labour and general legislation, there never was a greater need for an appropriate statistic. Nor was there ever a time when statistic was more needed as a guide to future legislation. The necessary data need to be compiled and statistical analyses to be made.'

George Handley Knibbs, 'The Development of the Statistical System of Australia', unpublished paper, circa 1911.

The Mathematical Theory of Population

One of the earliest examples of the contribution of the Bureau to international statistical methods was the publication *The Mathematical Theory of Population, of its character and fluctuations, and of the factors which influence them*. It was released in 1917 as an appendix to the Statistician's Report for the 1911 census. This publication had a twofold purpose of attempting to establish suitable methods for analysing census and demographic data, and actually using those techniques to analyse the 1911 census results.

The paper, of over 450 pages in length, received considerable international recognition at the time, and today elements of this work are still employed as standard methods of demographic analysis.

The work was released under the authorship of the then Commonwealth Statistician, George Handley Knibbs. However in later years his authorship came under question, with some suspicion that the work was primarily written by Charles Wickens, at that time the Supervisor of the Census. This would not be completely surprising as it is a common public service tradition for work released by an agency to be attributed to the head of the agency, irrespective of the true author.

While Wickens was almost certainly the author of some work officially released by the Commonwealth Statistician in that period (such as life tables) there is little evidence that he authored *The Mathematical Theory of Population*. Most evidence in terms of style, past and future works, and citations points to Knibbs as the author. (See A Gray, 'Knibbs and Wickens', in *Journal of the Australian Population Association*, Vol. 5, no. 1, 1988 for further details.)

Also the personal correspondence between Wickens and Knibbs during the 1920s suggests that their relationship was very cordial, including when directly referring to *The Mathematical Theory of Population*. Wickens refers to it directly as Knibbs' work on at least one occasion. And in another letter, Knibbs offers to share some further demographic research and suggests that it be published in their joint names or entirely in Wickens' name. Certainly Knibbs appeared happy to give credit when credit was due.

Though the Bureau recognised the need to keep abreast of changing societal and policy requirements, early methodological work and analysis were done ‘in the factory’, by those producing the new collections or by senior Bureau managers. The early Bureau was a very small place and officers needed to be generalists, both in terms of skills and in the division of work. A good example is the development of balance of payments statistics by Roland Wilson when he was second in charge of the Bureau.

‘Well, Wilson began very much as a one-man band because he had a very able staff of people who were mainly clerks and supervisors, extremely experienced and efficient at their job, but not equipped to handle economic problems or not qualified in statistical theory ... A lot of the research work, if you can call it that, the creative work, was done by Wilson himself. For example he developed the balance of payments field and the investment estimates through his own individual work. He was always inclined to get mixed up in the figures himself.’

Frank Horner interviewed in 1984.

Roland Wilson took a keen interest in the methodology underpinning the Bureau’s collections. Between 1932 and 1940, before he left to set up the Department of Labour and National Service, he overhauled a large number of the Bureau’s collections.

‘... the more I poked into the compilation of the statistics, the more disgusted I got. So it was one subject after another trying to find out just how the figures got put together and then trying to get extra staff and also to improve it ... I think practically every area that we were concerned with got done over pretty

drastically between 1932 when I came here and 1940 when I went off to Labour and National Service.’

Sir Roland Wilson interviewed in 1984.

One of the initiatives of the Wilson era was the creation of the ‘research officer’ position. At this stage, the Commonwealth Public Service was almost entirely staffed with clerks, who had either joined at age 16 or were returned soldiers given preferential employment treatment. Wilson saw the need, as had Knibbs, for officers with university training who had a greater level of technical ability and had been trained to think and solve problems. He convinced the Public Service Board to approve the creation of research officer positions, paving the way to employ university graduates.

‘I invented research officers, but it took me a long time to get the idea across to the Public Service Board. For research officers you need people with degrees, but it eventually prevailed, and then there was a great upsurge in research officers, right, left and centre.’

Sir Roland Wilson interviewed in 1984.

Throughout the war years, the Bureau continued to value its research officers, and made attempts to keep these important assets out of the war. Many former Bureau officers have stories of being ‘manpowered’ out of the armed services, on the basis of performing work that was essential and needed to continue.

‘Now ... Stan Carver ... organised for Manpower to reserve the occupations of the statistical clerks, in particular the research people and the would-be graduates. This affected a number of us. At that stage I was waiting to finish my degree,



but I didn't finish it until 1941, graduated in 1941 ... late November, the Friday before the Japanese came into the war ... and that week I expected to get a notice back from the MUR ... to come in.

But that never happened, this reserve applied.’

Frank Stewart interviewed in 1999.

The era of surveys

Though demand for statistics was increasing markedly in the post war era, it was recognised that to run a census (at that time the conventionally accepted method of obtaining statistics, other than those derived from administrative systems) for every new collection desired by governments of all levels would be very expensive. Internationally, theoretical debate about the relative merits of various sampling methods had been going for some time. In official statistical agencies in the United States, research into sampling and survey methodologies had been underway since the 1930s, and some sample surveys were used for official statistics during this time.

The Bureau conducted its first foray into surveys in 1947, with the production of surveys of capital expenditure, stocks and labour turnover. In 1950, following the 1947–48

and 1948–49 censuses of retail establishments, the quarterly surveys of retail establishments were introduced in the Development Branch of Compiling Division.

With a view to augmenting its fledgling survey capacity, the Bureau hired Ken Foreman in March 1951. In 1952 he was sent for a year to the US Bureau of the Census as a Commonwealth Public Service Scholar, where he studied sampling. He was to have a major influence on the shape and direction of the Bureau throughout the next 25 years.

In 1954 there was a setback to Bureau management's acceptance of surveys, when the sum of retail sales from the four quarterly retail establishment surveys for 1952–53 differed significantly from the equivalent estimate produced from the 1952–53 census of retail establishments. This was subsequently shown to be a result of non-sampling errors caused by the retail survey frame not being current.

'Mr. Carver, who in any case distrusted sampling methods, concluded them to be unreliable and wished to discontinue all sampling operations.'

Ken Foreman, 'History of Development & Coordination Division', unpublished paper, 1977.

It took careful analysis, the introduction of a provision for new businesses, and adroit persuasion to convince the Commonwealth Statistician that the mistake had been identified and would not be repeated. In the end, solving the problem led to an increase in the Bureau's body of knowledge regarding surveys and their application. However the true importance of frame maintenance and consistency was a lesson that took a very long time to learn and an even longer time to completely apply. Maintenance of survey frames has been an important issue ever since.

The basics of populations, surveys and frames

A target population is the group of people, businesses or other objects, about which we desire to collect some information. Some examples of populations are all the people living in a particular geographic region, or all people under the voting age across Australia. To obtain information about a target population, collecting data from the entire population in question (i.e. conducting a census), is not always possible. But useful data that relate to the entire population can still be obtained by running a sample survey.

In a survey, a proportion of a population is queried on the topic in question, and the answers are used to form estimates that represent the entire population. This is made possible by the use of scientific selection

procedures, which draw statistically representative segments from the population. This selection should be made from a list encompassing the whole population, so the extent to which the estimates represent the whole population is dependent on how well the list covers the target population. This list is called the frame.

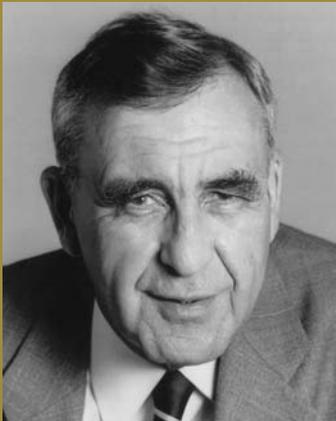
Two types of frames are commonly used for survey design: list frames and area frames. A list frame is a list of all of the selection units (commonly dwellings or businesses) in the survey population. An area frame is a complete and exhaustive list of non-overlapping geographic areas. Area frames are used when it is too expensive or complex to create or maintain a list frame

(e.g. for household surveys).

Frames can become inaccurate for many reasons, the most common being that populations are subject to continuous change and the frame easily becomes out of date. Another reason is that frames are often compiled from inadequate sources. This can sometimes cause frame units to be hard to identify or contact through a lack of correct information.

In cases where no single frame can be found to adequately cover the population in question, a dual frame approach can be used. This means that the sample is drawn from two partial, incomplete or otherwise deficient frames.

The Foreman phenomenon



By the early 1950s, Keith Archer was discussing with George Wood, the New Zealand Statistician, the matter of finding someone to investigate and establish sampling in the Bureau. In later correspondence, Wood described how New Zealand had seconded a 'bright boy' from the NZ Department of Scientific and Industrial Research.

'Frankly I feel that the selection of the suitable chap is your big job and it's no use him going overseas for at least 2–3 years after appointment. It will take him that long to get a sufficient understanding of your problems to fully appreciate what he wants to do overseas. If you send him 'green' he will come back with lots of bright ideas which won't work because he didn't understand enough about your problems to appreciate the sampling problems involved before his jaunt overseas.'

Letter from George Wood to Keith Archer, 13 April 1951.

That same year Ken Foreman was recruited, chosen for his mathematics and statistical ability. Born in 1923, Foreman joined the RAAF in 1943, and became a navigator/bomb aimer. He was badly injured when shot down in a Lancaster in 1945. He returned to Australia at the end of the war and had to endure a long convalescence. When fully recovered he enrolled at Sydney University, graduating with a Bachelor of Economics with honours.

In mid 1952, having been in the Bureau only a year and a half, he went overseas as a Commonwealth Public Service Scholar, to study in the US Bureau of the Census under Morris Hansen and Bill Hurwitz, two of the most famous names in sampling at the time. While there he studied advanced statistical theory with particular reference to sampling technique. He also had the opportunity to meet W Edwards Deming who provided the inspiration for his work on quality control.

On his return to the Bureau he set about introducing the Bureau to formal sampling methodology. This included formalising the techniques used for current samples, standardising those to be employed for future sampling work and developing comprehensive training for the benefit of those working in the area, as the level of knowledge and practical ability required for this type of work was not yet obtainable from universities in Australia.

Foreman travelled overseas several times to study the latest developments in sampling in the United States. (This was despite his wartime injuries, which meant that the Public Service required him to obtain separate permission from the Commonwealth medical officer for

each trip.) In this way the Bureau's sampling ability remained abreast of developments in theory and technique being made overseas. In time the skill of Foreman's areas developed to the point that the sampling research and development conducted in the Bureau was at the forefront of this work internationally.

The introduction of sampling opened a whole new set of statistical possibilities, and the Bureau became interested in the subject matter potential of surveys such as household expenditure and workforce surveys which were being undertaken overseas.

In the late 1950s Foreman was also instrumental in introducing seasonal adjustment, first as manually calculated statistics, later using the Bureau's first computer and then using an adaptation of the X11 program from the US, culminating in the publication of the Bureau's first seasonally adjusted statistics in 1967.

In 1980 Foreman took on a United Nations consultancy and in 1983 he spent a year as an Australian National University Research Fellow. He retired from the Bureau in 1984 and established a statistical consultancy working in particular with the tourism industry. His book *Survey Sampling Principles* was published in 1991, and from 1991 to 1994 he was a member of the Australian Statistics Advisory Council. He passed away in 1995.

Today Ken Foreman is remembered in the Bureau with respect, awe, gratitude and fondness. He raised the level of methodological competence in the Bureau, and was a key player in four important developments: implementation of significant sampling techniques; design and implementation of the household survey



Ken Tallis congratulates Steven Kennedy (right), second winner of the Foreman award in 1997. The first winner of the award was Robert Clark. His award was presented by Lu Foreman, Ken Foreman's widow.

system; pioneering work in development and application of seasonal adjustment; and the introduction of data management.

He was also a significant, caring and generous mentor for several generations of young statistical officers of the Bureau, guiding their training and research work, and ensuring that their training included participation in practical survey work and collaboration with officers in other areas of the Bureau. This approach continues to ensure that the Bureau has methodologists with an understanding of the practical realities of the problems they are trying to solve.

Finally, he was an early and significant contributor to the Bureau's relationship with its counterparts around the world, travelling often and forming relationships with many statistical officers in other countries.

As a testament to his important legacy the Bureau, in conjunction with the Statistical Society of Australia, set up two perpetual memorials – the annual Ken Foreman Lecture, and the Foreman Award. The award is given annually to an officer of the Methodology Division and provides an overseas trip to attend an international conference or complete a short training course. The winner is chosen for technical ability, contribution to the Bureau and potential for further development.

The Statistical Society of Australia jointly sponsors the annual Ken Foreman Lecture. Every second year, when the society holds its biannual conference, a noted methodologist from Australia or overseas is invited to visit the Bureau and present the lecture at the Statistical Society's conference. The Ken Foreman lecturers have included Bill McLennan, Professor Jim Durbin, Professor Jon Rao, Professor John Eltinge and Dr Pedro Do Silva.

Through the 1950s sampling methods were applied to many other Bureau statistics, and sample surveys were progressively introduced to cover many items of monthly production, as well as quarterly stocks, capital expenditure, local government employment, company tax and award occupations.

In addition, several sample surveys were designed for other agencies, including several government departments, town planning authorities and numerous academic bodies. For the Reserve Bank, the Bureau designed the survey of bank deposits. These were early examples of the Bureau's collaboration with other agencies, and also show the Bureau taking its national statistical coordination role seriously, although it was not yet formalised.

The 1950s also saw the beginning of work on the household expenditure survey in 1957 (although no survey was run until the 1970s). In November 1960 the first of the quarterly labour force surveys was run following large-scale preparations.

The burgeoning use of sampling saw the sampling area grow to twenty or so officers by 1959. As well, the introduction of quarterly labour force surveys led to the establishment of a field survey organisation with units in each state office, and several hundred interviewers and office assistants employed on a casual basis.

By the late 1950s the Bureau was working towards the acquisition of its first computer. From 1958 this also involved the mathematical staff, taking them away from sampling work. Nevertheless the section was able to proceed with the more important sampling initiatives.



Alan McKinnon out in the field during testing for the labour force survey.

Surveys pay their own way

'So I started work and I remember the very first day I was working out the design of the income tax survey ... an interesting survey in that it ... gave rise to the Sampling Section of the Commonwealth Bureau of Census and Statistics. Before Ken Foreman returned from the United States in about 1952 ... the income tax statistics were obtained under complete enumeration and it was a tremendous amount of work for the Taxation Office to produce them. Ken was asked to design a sample for the Taxation Office which would enable them to produce statistics of reasonable accuracy, and he did this – in consequence 80 places at the Australian Taxation Office were saved ... Six were transferred to the Commonwealth Bureau of Census and Statistics to form the Sampling Section and that was the beginning.'

Ken Brewer interviewed in 2003.

The census quality control scheme, using acceptance sampling techniques, was introduced in 1961 with the aim of checking the reliability of census figures. A sample comparison between the results of the quarterly labour force surveys and of the 1961 population census showed some discrepancies but overall general agreement. Post enumeration surveys were subsequently conducted after each population census.

In Papua New Guinea the Bureau, through Ken Foreman, undertook the planning of a survey of Indigenous agriculture in 1961. This survey provided comprehensive statistical data on this important component of the Papua New Guinea economy. In 1966 Ken Foreman was given the responsibility for running a population census with only twelve months notice. It was run on a sample basis to coincide with the 1966 Australian population census. This was a significant achievement, given the technological and cultural hurdles.

The experience of a lifetime: collecting statistics in Papua New Guinea in the 1960s



Fieldwork on the Papua New Guinea agricultural survey.

An agricultural survey was run in Papua New Guinea in the late 1950s and early 1960s. The unique situation of extreme remoteness and low development meant that statistical methods used in Australia to conduct an agricultural census were completely inappropriate in Papua New Guinea. A story attributed to Ken Foreman (a frequent visitor to Papua New Guinea in this period) illustrates the innovative lengths to which Bureau staff went when the more usual statistical methods were unavailable.

The statistical officers needed to develop a way to select a random sample of vegetable gardens in a village. Someone had the idea that if the plastic plates were thrown into the air they would come down in a random pattern in the various vegetable gardens. They tried it, but found that the plates didn't fly quite as they

hoped and were therefore not sufficiently random. So they adjusted their buoyancy by cutting bits out of the plates with tin snips. The plates then flew beautifully and created a random pattern of gardens to sample.

In 1966 for the first time the Commonwealth Department of Territories decided to run a census of all people throughout Papua New Guinea (previous censuses had been confined to the expatriate population in the major towns). The Bureau was requested to assist in June 1965, allowing it less than one year to develop a methodology that would work in a community where most were unable to read and write. Ken Foreman was given lead responsibility for the census. However because he was unable to fly by this time due to wartime injuries, Ken Brewer deputised for him.

It was decided to run a sample interview survey, as it would have been impossible to run a full census given the remoteness of many communities and the short time available to develop a methodology. The method used involved hired interviewers who could read and write, sent into villages to interview and fill in the forms.

However they immediately hit a snag as in Papua New Guinea it was culturally difficult to ask someone to count things. So in order to determine the number of people in a family, interviewers were required to ask the names of each individual, and then count the names. This technique was found to work so well that it was applied to everything from children to pigs, and even to axes.

It was also difficult to obtain dates of birth outside the urban areas and some inventive techniques were used. A list of 'notable events' was prepared for every district. Informants who were unsure of their date of birth were asked to identify an event they remembered as a child. They were then asked to point out a child the same size as the informant remembered himself or herself to have been at the time of this event. The collector then subtracted the child's age from the date of the event to give the date of birth of the informant. For example:

Collector: Do you remember when Father Ryan first arrived [1912]?

Villager: No, he was here when I was born.

Collector: Do you remember when the trade store started [1926]?

Villager: Yes, I was a small boy.

Collector: Can you show me a boy as big as you were then?

[People were generally reluctant to point to children of the opposite sex for this comparison.]

Villager: Yes, I was as big as he is.

[Points to a child who can be established as about eight years old.]

The estimated date of birth was therefore calculated as 1926 minus 8, i.e. 1918.

Brewer K & A Whittington, *The 1966 Sample Population Census of Papua New Guinea*, Commonwealth Bureau of Census and Statistics, 1967.

A new generation of recruits

From the beginning, Knibbs had voiced the difficulty of recruiting people capable of performing the more analytical and technological functions associated with running the Bureau. Wilson had partly addressed the problem with his research officers. The Statistical Cadetship Scheme went a long way towards solving it. The first statistical cadets joined the Bureau in 1959. At that time no Australian university taught sampling theory at a level necessary for work in the Bureau. From 1961, informal on-the-job training had been formalised into a series of internal lectures, aimed at the increasing number of new recruits and designed to make graduates productive more quickly. In 1963 the 'Notes On Sample Survey Theory' were produced as a printed version of these lectures. This and a further refinement, 'Principles of Sample Surveys', have been used in a number of Australian universities, and evolved into Ken Foreman's published book. Throughout the 1960s the need continued for graduates employed by the Bureau to have their sampling skills honed with advanced in-service training. Foreman's emphasis on training seems to have been inspired by his time in the air force during World War II.

'Ken Foreman said to me a few times, they (the RAAF) had to handle a lot of men and he also was impressed by the training. I'm sure that had a real influence on Ken Foreman ... as to what we should do [in terms of] documentation, how you handled large groups of people ... the training was good and we were made to feel we were important.'

Col Proud interviewed in 2000.



John Carroll and Ritchie Barnard, on a field trip in 1962, pause to check the map.

Under Ken Foreman's guidance, new recruits were also taken on field trips where they were exposed to the reality of collecting sample data. This provided valuable real life experience to supplement the theory that they had acquired at university.

'[Ken Foreman] always showed a great interest in the development of young officers and recruited, inspired and trained several generations of young statisticians. He spent time with all new graduates convincing them of the importance of their work and, very early in their careers, ensured that all new staff were sent to get "some [s__t] on their Xiji's" by participating in practical survey work and collaborating with their colleagues in other parts of the Bureau.'

Bill McLennan, 'A History of the Development of Statistical Methodology in the ABS', Inaugural Foreman Lecture, 9 July 1996.

Generalised systems and other developments

Throughout the 1960s the project for the integration of economic statistics gathered momentum. By the late 1960s this was taking up a large part of the Bureau's energy, and all developmental work had to be focused on preparation for the first integrated economic censuses, in respect of the financial year 1968–69. The censuses did not cover the agricultural sector. To complement the censuses, a survey was conducted of finances of the agricultural sector. The Sampling Section was responsible for the design of the annual farm finance survey, for which an innovative two-phase sampling scheme was devised. It involved mail enumeration of a large sample for the first phase and field interviews of a smaller sub-sample for the second. This avoided both the mail reporting biases associated with a mail questionnaire and the high cost of data collected by field interview.

About the same time a generalised programming system was developed to handle the vast amount of sample selection and processing involved in agricultural surveys. This system was subsequently applied to the annual farm finance survey, other agricultural surveys including those for cereals, sheep and wool, and some ad hoc surveys such as the survey of wool presses.

By then it was apparent that, in addition to the constraints on other developments being imposed by the integrated economic censuses work, the intention to rebase all the Bureau's economic surveys on a single integrated register of businesses, and the need to renovate the population survey system, would require greater sampling resources than the Bureau was likely to have.

The answer found was to reorganise work practices and move to a mass production approach to developing sample surveys, rather than the custom-built approach used to date. The plan was to create the General Survey System. This system was intended to facilitate the full range of survey functions: survey design; frame creation; sample selection; collection control; edit and imputation; estimation and variance calculation, to be operated by the Bureau areas conducting the surveys.

The system proved far too ambitious to be accomplished using the technology available at the time. But in developing the concept Foreman showed considerable foresight, and in design and philosophy the system was ahead of its time. Today's technology, used effectively, can accomplish those visionary goals of an integrated user driven system.

The population survey was redesigned following the 1971 population census. The population survey had previously consisted of a one per cent sample across Australia. By changing the survey design to incorporate some improvements in the design and differential sampling fractions in each state, the survey was able to produce the acceptable levels of accuracy for the state and Australian estimates with a 30% reduction in sample size compared to that required under a constant sampling fraction.

Block listing by air

Block listing is a necessary part of sampling, when a multi-stage area frame is being used. It is the process by which every dwelling in a particular area is itemised, and it is done to ensure that every resident has the potential to be included in the frame. From the beginnings of sampling in the Bureau in the 1950s this had been done by car, and in rural areas often by four-wheel drive. It involved the laborious and often tedious process of driving along every highway, by-way, back alley and cart track in order to list every inhabited structure.

In the early 1970s, no doubt spurred by a disinclination to spend months with methodological colleagues bumping along dirt tracks like statistical rally drivers, Bill McLennan suggested an alternative. Perhaps the same information might be obtained by careful study of aerial photographs. The photographs, and photo reading expertise, were obtained, but it was found that it was not always possible, from photographs of that era, to adequately distinguish dwellings from other structures such as sheds.

The next suggestion, 'why not charter light aeroplanes and block list by air?' also came from Bill McLennan. Arrangements were made and an experimental run set up, to test the feasibility of block listing this way. A chosen few, divided into two groups to travel in two

separate Cessnas, collected at Canberra Airport one morning in May 1972. It was a day that happened to be afflicted with (or perhaps blessed by ...) the first fog of the year. The members of the group were distinguished by an ability to even consider the prospect of travelling in a five seater aircraft; nevertheless at least one of their number was happy for the fog to last as long as possible.

Some time in the late morning, once the fog had lifted, they took off and, working from the aerial photographs, started to cover two preselected areas around Goulburn. A couple of methods were trialled and a better one agreed upon. Meanwhile, down below, a control group was block listing the same area from the ground.

The results were encouraging. The aerial effort had taken one to two hours to cover an area that had taken one to two days to cover by ground. But aerial block listing was not to everyone's taste. The combination of small aircraft, quite low altitudes and frequent tight circling was enough to eliminate anyone suffering from motion sickness or a fear of flying, small spaces or heights.

Integral to the Bureau's future

By the 1970s the methodological capacity of the Bureau had grown to the point where it was extending into a number of specialist areas, and methodology was starting to be regarded as essential to the integrity of the Bureau. The Commonwealth Statistician Jack O'Neill saw methodology as integral to the Bureau's future. As well as the traditional focus on sampling, the Bureau was also gaining expertise in statistical analysis, and was becoming more involved in statistical coordination.

In 1973, O'Neill restructured the Bureau, with a view to upgrading the Bureau's methodological capacity and general technological development, as well as providing specialist assistance in particular operations. The result was that the head of methodology was elevated and reported directly to the Commonwealth Statistician. Throughout the 1970s the number of staff involved in methodological work continued to grow.

Social data gather prominence

In 1972 Professor RF Henderson headed the Committee of Inquiry into Poverty. In September of that year the Bureau was asked to run a number of surveys for the Inquiry, looking at income, long-term recipients of unemployment benefits, one-parent families in receipt of social service benefits, and the incomes of farm operators.

In April 1973 the Bureau conducted a survey of immigrants for the Department of Immigration. The survey was a first in a number of ways. It was run separately rather than as a supplement to the labour force surveys; it required a search phase to identify the location of immigrants; and it required a new category of interviewer and a number of interpreters. It proved expensive to develop a one-off processing system. This situation could not be allowed to continue, and it led to the development of the General Multistage Processing System (GMPS) carried out under Bill McLennan's guidance. The GMPS came into service just in time to process the poverty survey results, the planning and processing of which would not otherwise have been possible.

The first household expenditure survey was run successfully in 1974. There had been some preliminary thinking on the topic in the 1950s, and in 1972 development work began in earnest, with extensive subject matter study and sample design work.

Although post enumeration surveys had been held since the 1966 population census, survey results were first used to adjust the population count for under-enumeration after the 1976 census. Under-enumeration in this case was considered too high to ignore, and adjustment was necessary to make the population estimates reasonable and realistic. Adjustments for undercount were also made following successive population censuses. Because the post enumeration survey was now being used to adjust for population undercounts, from 1976 it became more important than ever to ensure that it was statistically accurate and independent of the census.

Business surveys into the 1980s

For business surveys the early 1970s saw research begin into methods of controlling multiple selection. As the number of surveys increased, the Bureau needed to manage the compliance costs on small business of being randomly selected to participate in a survey. Under the leadership of Ken Brewer, an innovative method known as collocated sampling was developed, which allowed control of both overlap (the number of surveys in which an individual business is selected) and rotation (the length of time a business stays in the sample).

The rotating program of annual economic censuses continued to expand in the 1980s, beyond the traditional production and distribution industries. The pressure to collect data covering a broader range of industries for the same or less cost implicitly shaped much of the methodological work over the years ahead. Another big influence was the increasing interest in the importance of non-sampling errors on the accuracy of business surveys.

With the increase in industry surveys in the 1980s, the distribution of provider load across businesses was an even greater issue than it had been in the 1970s. In the early 1980s the 'synchronised sampling' technique was developed and came into regular use. This was an enhancement of collocated sampling.

Within the Statistical Services Program there was a gradual expansion in the range of work throughout the 1980s, particularly in dealing with sources of error. There was a move to provide greater levels of practical support to subject matter areas, in particular to those conducting surveys of businesses. To augment this move, research was directed towards practical topics such as editing and business rules. Therefore engagement with the statistical areas became a deliberate policy during this period.

Subject matter areas became more aware of the possibilities for increasing quality, and methodological work became more focused on the problems being experienced 'at the coal-face'.

The sampling area was involved in the development of large-scale sample surveys in many new industries and some traditionally covered by censuses. Each industry presented unique methodological issues and these were solved by innovative application of sampling methodology; for example some surveys were conducted using a dual frame approach. Agriculture and manufacturing remained true censuses into the 1990s.

Reflecting the move to a more output oriented program of work for the sampling area, editing practices were targeted with a view to implementing more efficient methods. Studies into the 1979–80 manufacturing census, the 1983–84 agricultural census and the 1985–86 retail census all led to the same conclusion. Traditional editing techniques were too costly and did not contribute as expected to the overall accuracy of the collections. However it took the advent of National Project Centres (see chapter 2) in the early 1990s to provide an environment where serious attention could be given to following up these results and rationalising the amount of editing undertaken.

Designing frames and forms

From the start Foreman had understood the importance of survey frames and form design, and their importance for the accuracy of surveys. When household surveys were set up, frame and questionnaire development received considerable attention. This focus explained the existence of Population Survey Development as a discrete area. It was also the impetus behind some often repeated Foreman phrases, such as: 'get some s__t on your X_{ij}s', to stress the importance of field testing and the involvement of survey designers in the actual tests; and 'what would the man in the street have to say about this' in relation to form design.

However, responsibility for business survey frames and form design was already established in the statistical areas, and so initially they did not receive the same degree of methodological attention. A range of major enhancements and overhauls throughout the 1980s were to address this.

Early in 1986, to improve the accuracy with which respondents reported data, David Sless from the Communications Research Institute of Australia (CRIA) was engaged to redesign the layout of the form for the survey of motor vehicle use. The resulting form was considerably better (both visually and in terms of respondents' ability to understand the questions) and, at Bill McLennan's instigation, CRIA was contracted to

work with the Bureau to produce the first version of the Forms Design and Evaluation Standards Manual, which was released in 1988. The manual was ahead of contemporary thinking, and even today is regarded internationally as an example of best practice in forms design and development. The focus on forms design and testing was aimed at reducing the need for extensive editing by getting the data correct at source.

Methodologists were closely involved with work through the late 1980s and early 1990s to understand and improve the quality and currency of the Bureau's business register, and their impact, through the quality of frames, on the data from all the annual and sub-annual surveys of businesses. The main elements of this work are summarised in chapter 3.

Household surveys through the 1980s and 1990s

The program of supplementary social surveys was run in parallel with the labour force survey. Begun in the early 1970s, by the 1980s it had settled into a routine, albeit a rather hectic one. Throughout the 1980s optical mark reading was introduced to replace keyed data entry, and questionnaire development moved from the paper, pencil and glue-stick era to using Macintosh computers and some of the first laser printers brought into the Bureau.

Attention was also given to the feasibility of using advancing technology to improve survey enumeration. Following developments overseas, testing of telephone interviewing for the labour force survey commenced around 1984, and in 1987 a statistical impact test took place, using one rotation group from the live survey. However the unexpectedly large estimated telephone effect from this test effectively took telephone interviewing off the development agenda for the monthly labour force survey for almost a decade. Furthermore, the relative costs of telephone interviewing were higher than today, so the efficiency savings were not as great as had been hoped.

The first appearance of confidentialised unit record files (CURFs) from household surveys and the population census was another landmark event during the 1980s.

By the early 1990s the availability of CURFs, and an emerging time series of data files from the many supplementary social surveys (especially the household expenditure survey and the income survey), had attracted a number of knowledgeable users. Their increasingly sophisticated uses of CURFs (for example in micro simulation models) were beginning to reveal the limitations of the methods used to weight complex household survey files.

In the early 1990s household survey estimation methods were overhauled and estimation methods were better adjusted for under-enumeration and to correct some biases. Experimental estimates of household numbers, to use as benchmarks, were developed by combining population census data with more current information from the labour force survey.

In 1994 a new weighting tool, CALMAR, was acquired from the French statistical agency, the Institut National de la Statistique et des Études Économiques (INSEE). It was used to ensure that survey data conformed simultaneously to known benchmark values for both numbers of persons and numbers of households. This is known as integrated weighting, and following further development the technique became standard across Bureau social surveys.

These newer estimation techniques posed problems for the existing methods of estimating standard errors. In 1995 a technique called jack-knifing was first used to provide estimates of standard errors. Further developments occurred in 1999, when a locally developed SAS macro was introduced. This eventually superseded CALMAR. It ran more efficiently, produced jack-knife estimates of standard errors, and also implemented alternative approaches to calculating standard errors, such as the weighted residuals approach which had appeared in the literature by that time.

Meanwhile, the dream of introducing telephone interviewing to reduce costs had not been abandoned. Reflection on the earlier experiment, and overseas experiences, had led to the conclusion that the statistical impact observed in the 1980s was a learning effect that would diminish over time and could be overcome with training. Telephone interviewing was finally introduced into the monthly labour force survey in 1994.

Phasing in telephone interviewing

During the phase-in of telephone interviewing to the monthly labour force survey, which was spread over about eight months, the statistical impact was carefully monitored using two quite different techniques. One was a time series technique known as state space modelling, with which the Bureau had gained some expertise following visits by internationally renowned statistician Professor Jim Durbin and an extended sabbatical visit by Professor Danny Pfeffermann of the Hebrew University in Israel. The other technique was a more standard composite estimation approach. These techniques allowed estimates of the telephone interviewing effect to be available within days of the monthly labour force survey publication being finalised.

A small team conducted a 'real time' month-by-month analysis, which showed that the statistical impact started small but increased over successive months. About four months into the phase-in period a decision was made to comment on the telephone interviewing effect in the monthly publication. Almost perversely, as soon as the public was informed about the possible effects, the learning effect kicked in and the impact virtually disappeared.

Next the Bureau tackled computer assisted interviewing. Like telephone interviewing, it took two attempts to introduce it into the monthly labour force survey. It was introduced successfully for the special supplementary surveys, but an initial plan to introduce it for the monthly labour force survey had to be cancelled, on cost rather than methodological grounds. During 2004 the second attempt (again accompanied by extensive 'real time' monitoring of the statistical impacts) succeeded. Again the impact looked like it might be significant after the early surveys but disappeared as the learning effect kicked in.

This period also saw some different and challenging household survey designs being developed. Design work for the survey of employment and unemployment patterns began in 1995. It was the first large-scale longitudinal survey undertaken by the Bureau. This survey had a complex survey design including a standard household survey panel as a control group, and a targeted sample of employment program participants drawn from the data files of the Commonwealth Employment Service. By 1996 the weighting and imputation phase was complete, and in 1997 the first wave of data was analysed.

Total Quality Management

Formal scientifically designed 'accept/reject' quality control procedures were applied to coding operations in the population census in the 1960s, under Ken Foreman's leadership. From the 1976 census onwards, although sampling was still used to assess quality, the 'accept/reject' aspects were discarded. The management information from the samples was invaluable in identifying the sources of errors. These could be reduced by addressing these sources (e.g. coders not fully understanding procedures) and reducing the number of future errors from them. In the mid 1980s the CSIRO was engaged to work with the Bureau to explore and implement modern 'Total Quality Management' approaches to quality assurance. The underlying concepts, of measuring and monitoring quality indicators, reacting to special cases and systemic problems, and empowering the staff actually working in the processes to diagnose and correct causes of systemic problems, fit well with management practices and have been used extensively in census operations since that day. Although not formally picked up across the Bureau, Total Quality Management thinking prevailed through the late 1980s and 1990s.

Survey integration and other developments

The advent of National Project Centres (see chapter 2) in the early 1990s fuelled a resurgence of interest in methods to reduce operating costs. A study into significance editing for the average weekly earnings survey in 1992 concluded that up to 40% of the editing effort had no impact on published estimates, and led to a significant redesign of the editing strategy for that survey. This was followed in 1993 by the release of an editing manual.

In 1991 a further examination of the business register began. This time the aim was to clean out the many businesses still on the register but no longer operating. Completion of the process had the unexpected effect of exposing many 'local' procedures adopted over the years to compensate for known deficiencies in the business register. The sudden improvements in the quality of the business register had made these practices inappropriate and produced misleading estimates. It took until mid 1994 to complete the cleanup.

The lessons in total survey design from these experiences could not have been clearer – there were far better returns from methodological investments in frame maintenance and other non-sampling issues, than from work on clever sample designs.

The culmination of the accumulated wisdom was the establishment of the survey integration project in late 1992. Ian Castles accepted a recommendation to initiate the project with a broad mandate to investigate and resolve non-sampling issues in business surveys. The project and its steering committee are still in existence today and have instigated many practical improvements to business survey methods.



Susan Linacre started in the methodology area of the Bureau as an Honours Cadet in 1974. In 1996 she was made the first head of the new Methodology Division, a position which she held until she left Australia in 2002 for a two year stint in the UK's Office for National Statistics. Today she is the Deputy Australian Statistician with responsibility for the Population Statistics Group.

In 1992 the first mathematical statistics cells were created in state offices, aimed at boosting the methodological expertise available to statistical processing areas. They were a resounding success, putting the methodologists in close touch with practical statistical issues. The cells have since been involved in several key pieces of methodological research, and were in the forefront of much of the survey integration work throughout the 1990s.

Incompatibilities between the business register and survey operating procedures continued to have broad impacts. Late in 1994 the economy was widely regarded as recovering from recession and the capital expenditure survey was being keenly monitored for a sign that business investment, a key economic indicator influencing monetary policy, had turned around. However some quality problems with the tax data feeding into the business register, coupled with the collection's approach of only refreshing the survey frame annually, meant that the survey failed to properly show changes in business investment. Detection of a key turning point in the economy was consequently delayed for 12 months.

With the spotlight now firmly on business register maintenance problems, the involvement of the Treasurer of the day, Ralph Willis, led to improved collaboration between the Australian Taxation Office and the Bureau, resulting in greater reliability and monitoring of taxation data for business register maintenance purposes. The 1994 von Reibnitz review 'Source Data for the Quarterly National Accounts', and the 1995 Wroe review of national accounts coverage, appropriateness and compilation procedures found that, despite nearly a decade of effort at improvement, incompatibilities between business register maintenance procedures and survey processes were still causing residual deficiencies in survey estimates. Decisions were made to adopt survey integration recommendations such as the use of common timing (quarterly not annual) for the extraction of survey frames from the business register, the use of uniform status indicators in all business survey processing, full implementation of standard sample and frame maintenance procedures, and the introduction of consistent provisions for new businesses in all surveys, which had been debated for some time. The focus moved on to practical implementation.

Quality and data

The mid 1990s saw two separate streams of work, to define standard quality indicators for business and household surveys, and to store them centrally. Following a paper by Statistics Canada that introduced a much broader framework for defining quality (relevance, coherence, timeliness, accessibility and interpretability as well as accuracy), the Bureau in 2001 aligned these aspects of quality to internal operations and procedures.

Over the years the Bureau has moved from preventing the release of 'low' quality data, to recognising that the quality required depends on the purpose for which the data are being used. There has been a steady trend towards releasing more data, and labelling the quality more clearly. As the Bureau moves towards better engagement with other producers of statistical data in the National Statistical Service, this focus on appropriate labelling of data quality will continue to develop.

A 1995 review into the business register maintenance strategy, headed by Susan Linacre, looked at how best to focus resources to achieve the required outcome of a business register that remained relevant throughout a rapidly changing business cycle.

In 1996 under Bill McLennan the Statistical Services Branch became the Methodology Division, a signal of the corporate intention to subject all Bureau methodologies to greater scrutiny, and to maintain a rigorous approach to evaluating and adopting new methodologies. In this year also an eight member Methodology Advisory Committee was established. The committee comprises representatives from a number of Australian and New Zealand universities, and its establishment strengthens the important links between universities and the Bureau, both to obtain external expert input to Bureau methodologies and because universities are the source for the Bureau's recruitment of quality mathematical, statistical and econometric graduates.

The new millennium has seen further development in a number of areas. There has been continued work on household surveys and on the use of tax data, in particular the use, for business surveys, of new data made available by the taxation reform of 2000. Research has continued into better methods of microdata release.

Statistical analysis

Analysis has always been an important part of the methodological work of the Bureau. Some significant analytical events stand out through the century.

As far back as the late 1950s the Bureau was able to manually produce seasonally adjusted statistics from the extensive time series that had accumulated in some areas of economic statistics. These were used by interested areas in the Bureau and Treasury. In 1966 the Bureau acquired the use of the US Bureau of the Census method X11, a computer based seasonal adjustment program, to replace the old manual system. Following extensive analysis and experimentation to adapt the X11 program to Australian data, the Bureau published the first *Seasonally Adjusted Indicators* in 1967, despite Treasury doubts at the time that this was a Bureau role.

This publication included the Bureau's first official statement regarding the concepts and methodology underlying seasonal adjustment. The Bureau had previously published only the minimal explanatory material needed to interpret the statistics themselves. But seasonal adjustment produced a new type of statistic, and the Bureau's publication contained statistics derived using one of many possible mathematical processes. Adhering to the old approach would have exposed the Bureau to accusations of inaccuracy, compromising its good reputation. This changed approach to statistical accuracy was soon to result in the inclusion of statements of sample and non-sample error in survey publications.

'It had to be made clear that seasonal adjustment factors, as estimated and as applied in seasonal adjustment, were not estimates of some true or definable values and, consequently, that no objective assessment of the accuracy of estimated

seasonal adjustment factors was possible, or even conceivable; that in essence seasonally adjusted statistics are the result of one of a variety of justifiable arithmetic processes.'

Ken Foreman, 'Development and Coordination Division', unpublished paper, 1977.

In 1968 the Bureau moved into econometric analysis with econometric work headed by Michael Keating (later to become Secretary to the Department of Employment and Industrial relations (1983–1986), Secretary to the Department of Finance (1986–1991) and Secretary to the Department of Prime Minister and Cabinet (1991–1996)). The graduate work of Chris Higgins (later to become Secretary of the Treasury) from the University of Pennsylvania, and work on quarterly consumption functions and stock valuation adjustments, formed the basis of the first version of an econometric model of the Australian economy called the National Income Forecasting model (NIF), produced in collaboration with Treasury.

National Income Forecasting Committee

In May 1963 the National Income Forecasting Committee was set up, following a suggestion by the Secretary of the Treasury to the Governor of the Reserve Bank and the Commonwealth Statistician. The committee met usually four times yearly to discuss forecasts. In those days, forecasting consisted of separate forecasts of the components of the national accounts.

In 1966 the Treasury produced a paper critical of this approach. It suggested taking into account the functional relationships between the various components. In response to this suggestion a sub-committee was set up to examine the methodology necessary for this type of analysis.

An area in the Bureau under Michael Keating had the task of processing and analysing historical data to develop useful functional relationships. In June 1967 Don Youngman of the Bureau wrote to the National Income Forecasting Committee, outlining the Bureau's interest in and position on forecasting. He explained that methodological work would improve the accuracy and relevance of current statistics, for which some element of forecasting from statistics of previous periods was inevitable. He felt that it was appropriate for the Bureau to participate in the development and application of econometric models to the extent that it would help the Bureau to appreciate the direction to take in developing economic statistics. It was not appropriate for the Bureau to take any direct responsibility for economic forecasting, but important that it offer users help in

interpretation of statistics in the light of the Bureau's close contact with the statistical material. This was expected to divert many resources away from basic data collecting function, and a need was envisaged to keep the work within strict bounds, concentrating on those projects which were related to the development of economic policy or otherwise of some significant public interest. In the light of requests from other agencies for assistance in forecasting, it was hoped that the work would lead to the development of a methodology of forecasting which the Bureau could make available to other users (excluding any confidential data). Youngman had reservations about a proposal to allow the possibility to set aside functions in favour of intuition, and proposals about 'gap' analysis.

Also in 1967, Keating approached Ken Foreman about the possibility of using mathematicians from Foreman's area, and computing facilities, to do the regressions.

With the release of the Bureau's Corporate Plan in 1987, Ian Castles explicitly emphasised the importance of analysis, where in the past it had tended to be implied. Analysis was regarded as part of the plan to add value to Bureau products to satisfy increasingly sophisticated user demands, and to anticipate potential future information needs within the Australian community.

Around this time the econometrics and time series units were brought back into Statistical Services Branch. Before long, staff rotations through these units were broadening the focus of the branch, and a greater understanding of time series and trend fed into sample design work.

Development of a replacement for the NIF econometric model began in 1990, led this time by econometricians at the Treasury. The Treasury Model of the Australian economy (TRYM – the acronym chosen to indicate its comparatively less complex – slimmed down – nature) was launched at a Commonwealth Treasury TRYM conference in 1993. The collaborative effort between the Treasury and the Bureau built upon the cumulative econometric expertise acquired in both organisations since the first steps were taken in the 1960s. It was released to the public in 1995. The Bureau collected, constructed and delivered most of the underlying data series required by the model, and circulated quarterly updates for them. In addition, by agreement with the Treasury the Bureau distributed to the general public a version of the econometric engine that applied the model equations to the data series.

This era also saw the first release, in February 1991, of *Australian Economic Indicators*, produced by the Econometric and Time Series Analysis Section with input from many other areas of the Bureau. Designed as a flagship publication, the AEI was destined to carry numerous analytical articles in the years ahead.

Econometric modelling by calculator

In 1968 work started on an econometric model, drawing heavily on a suite of computer programs for econometric work that Chris Higgins had brought back from his studies in Pennsylvania. These were first made operational by the use of an Olivetti programmable desktop calculator.

I had brought back from Pennsylvania the suite of computer programs for econometric work largely developed by Morris Norman. Using my own elementary capability in Fortran coding and with the assistance of applications programmers in the Bureau, particularly Jeremy Firth, we were slowly getting those programs running on the local system. At that stage, however, we had not made operational the model solution program (SIM), which was later to become the workhorse of the forecasting system.

Keating and I had access in the Bureau to an Olivetti programmable desktop calculator and so we set up a solution routine for an analytically derived quasi-reduced form of the model. Although the model was quite small that was a challenge: firstly, we wished to be able to vary parameters (e.g. in the income closure) depending on analysis of the results, and secondly, because the calculating machine was limited to eighty program steps including data entry. (It was an electric calculator, literally desk top size; it must have been one of the last pre-electronic.)

They were exciting days as we actually succeeded in producing material useful for the forecasting rounds. Although

we had no clear idea what might be ahead in late 1968, an econometric model was off and running in the NIFC process.'

Chris I Higgins, 'The origins of the NIF model: some personal recollections', from *Proceedings of the Conference on the NIF-10 Model*, Department of the Treasury and Centre for Economic Policy Research, Australian National University, 19 October, 1982.

The first econometric model was operational in 1968. In 1969 senior people in the Bureau decided that econometric work had shown enough promise to set up a sub-section called 'Econometric Applications' headed by Vince Fitzgerald who had come across from the Sampling and Methodology area. The econometric model had its first appearance in the public domain in 1970.

Also in 1969 and 1970 much work was done in the Bureau to develop a 'Report Generator' and 'Time Series File System'. These pieces of software found many applications.

Around 1984 a decision was made to broaden the range of work conducted by the area responsible for NIF, and Treasury had plans to begin constructing a further version called NIF11.

Over the years many iterations of this model were produced, each containing more behavioural equations in an attempt to more closely and accurately simulate the Australian economy. The final version, NIF88, was proposed in 1988. The response indicated that demand had swung towards less complex and more transparent models of the macro economy.



One of the new areas of analysis undertaken in the late 1990s was a quarterly experimental composite leading indicator of Australian economic activity. The team undertaking this work was (from L to R): Richard Ware, Daniel O'Dea, Craig Stevens, Theresa (TJ) O'Connor and John Zarb.

In the early 1990s the Bureau had made a deliberate decision to focus its time series commentary on trend rather than on seasonally adjusted series. In the meantime research effort continued into the seasonal adjustment methods and factors that would achieve the best possible seasonally adjusted estimates. It developed special algorithms to estimate trends, that provided desirable properties at the end of the time series.

A knowledge-based time series package, nicknamed SEASABS, was released in 1998. The release was the culmination of a decade of extensive development work, including a three-year collaborative effort between Time Series Analysis Section and the Knowledge Engineering Group. Prior to the rollout, a version of SEASABS had been running under Microsoft Windows in a standalone capacity (not connected to any time series database) as a replacement for mainframe X11 for 14 months. It provided a single tool for all the Bureau's seasonal adjustment work, as well as a platform for developing and implementing improvements to time series methods.

In 1998, as the culmination of some groundbreaking work linking sample design and trend, a new Methodology Division Working Paper was added to the series 'Working Papers in Econometrics and Applied Statistics'. *Trend estimation in small areas* explored the problem of producing trend estimates for regional unemployment rates based on the labour force survey.

In 1999 an information paper *Seasonal influences on retail trade* was released to highlight the seasonal adjustment processes undertaken by the Bureau, followed soon after by *Introduction of concurrent seasonal adjustment into the retail trade series*. The paper summarised investigations into the benefits of using concurrent seasonal adjustment (where seasonal and trading day factors are revised monthly) rather than the practice then of annual forward factor adjustment (where seasonal and trading day factors are revised annually).

Recent years have seen continual development of time series analysis to successfully resolve some long-standing questions. Methods to seasonally adjust short time span series have also been developed and have proved invaluable.

In his 1995 restructuring of the Bureau, Bill McLennan explicitly recognised the importance of analysis by setting up a dedicated Analysis Section in the Methodology Division. There were also other analysis units in subject matter areas throughout the Bureau.

With increasing resources allocated to analysis, the Bureau produced some significant analytical work throughout the decade. Analysts were involved in the preparation of a number of projections of labour force participation rates, important inputs into micro and macroeconomic modelling, policy development, and marketing and business strategies. They were also integral to the production of a number of important new

publications, as well as some key improvements to existing statistics. Research also began into the application of different and often new (to the Bureau) techniques to existing Bureau datasets.

The productivity and prices projects commenced in 1996. The first had the aim of producing real output, factor input and productivity measures for government and other service sectors, to replace the traditional method of using input costs as a proxy for output. The prices project looked at possible bias in the CPI and also began research into the best formula to use in calculating elementary aggregates. It then moved on to an investigation into price index construction and measurement of CPI bias using scanner data. The year 1996 also saw research begin into building equivalence scales comparing the income or expenditure levels needed by different households to achieve a given standard of living.

In 1999 the Bureau further strengthened the role of analysis, leading in 2000 to the expansion of the Analysis Section into a branch.

Throughout this period, analytical work by the Bureau produced *Measuring Australia's Progress*, estimates of Australian human capital and wealth, and spatial price indices.

The new millennium has seen further development in a number of areas. An example is time series adjustment where there has been a resurgence of collaboration with some overseas agencies involved in similar work.



Trends are your friends

As trend analysis gained in importance, there was a move to explain the merits of trend estimates over seasonally adjusted or original data. Over 1993 and 1994 the 'Trends are your Friends – Smarter Data' Seminar series was run, with some flamboyance, by John Zarb. Its aim was to inform people of the differences between original, seasonally adjusted and trend estimates, and to make them aware of pitfalls associated with many ways of analysing these series. It was hoped that this would lead to better reporting and more informed decisions based on the data.

John took this task very seriously, and went out of his way to personally tutor any journalist and economic commentator who might have missed his talks.

Above: 'The Devil's in the trend' — John Zarb presenting the 'Trends are your Friends — Smarter Data' seminar.

Public Accounts Committee review

The Joint Committee of Public Accounts discussion paper 'The Collection and Dissemination of Statistics' was tabled in Parliament on 10 November 1981. The result of investigations into the functions and operations of the Bureau, the paper acknowledged the important contribution of official statistics to the formulation of effective government policy, and made a number of recommendations aimed at increasing the quality and cost effectiveness of those statistics:

- strengthening the Bureau's statistical coordination role, including the establishment of inter-departmental communication on statistical matters and a central statistical register
- analysis of ways to reduce the paper burden imposed on citizens by the collection of statistics, including the use of taxation data
- further work on statistical standards and classifications
- amendment of the Census and Statistics Act to increase the potential use of statistics, including the use of charging to help ensure that statistics being produced were being used.

Coordination and statistical consultancy

Since 1975 the Bureau has had a legislated role to coordinate statistical activity in Australian government agencies. The Committee on Integration of Data Systems chaired by Professor LF Crisp in 1973 recommended this role, having identified the value of the large quantity of data held by agencies and the need for some form of statistical coordination. In 1975, statistical coordination formally become part of the functions of the Bureau.

The Joint Committee of Public Accounts study into the collection and dissemination of statistics, tabled in November 1981, recommended strengthening the Bureau's statistical coordination role. To further this role, the Bureau preferred a system of mutual cooperation and reporting that was accepted by the government, and in 1983 the Australian Statistician notified departmental and authority heads of the statistical coordination procedures. These were formally implemented in 1984, primarily taking the form of voluntary joint reviews. These reviews

continued for ten years, when the procedure was ended due to a lack of interest from other agencies.

Prior to the Bureau receiving a legislated coordination role, it had operated a statistical consultancy service since the 1960s, providing statistical and methodological advice to other government agencies. This brought a stream of interesting work, often with practical experiences attached. While much of the work supported the surveys of other agencies, some novel examples included estimating the volume of wood in a pine forest and supporting the Department of Primary Industries in urgent negotiations with American officials about Australian beef imports which had been impounded after the results of a statistical test in the United States for pesticide residues.

The consultancy service underwent a change of focus in the late 1980s. With the introduction of user charging, and in response to a growing demand, it went through a period of aggressive growth. By the early 1990s decisions to reduce the focus on revenue per se in favour of an emphasis on clients' needs and client relationships, led



The Statistical Clearing House staff in 1997 (from L to R): Michael Colledge, Glen Malam, Narelle Budd, Rosslyn Starick (née Lew), Michael Meagher and Alistair Rogers.

to a gradual reduction in entrepreneurial fervour. This was also influenced by the rapidly increasing demand for methodological staff for the Bureau's own work.

In 1997, following recommendations by the government's small business deregulation taskforce, the Statistical Clearing House was established. Its function is to review

all collections conducted by any Commonwealth government agency (including the Bureau) involving 50 or more businesses. Its role is to improve survey and forms design and minimise the reporting load imposed on businesses by Australian government. While the Statistical Clearing House reviews are similar to joint reviews conducted in the 1980s, the new process was supported by a Prime Ministerial directive to comply.

More recently the Methodology Division has had a key role in the development of the National Statistical Service. This initiative is designed to fully use data held by all levels of government. The National Statistical Service looks to embrace other statistical producers and improve the quality, coherence and accessibility of their statistics.

Throughout the century the Bureau has paid attention to methodological issues, and methodology has made a vital contribution to the quality of Australian statistics. Methodologists, through their work, gain exposure to and familiarity with all areas of the Bureau. It is possibly for this reason that former methodologists have played an important part in senior management over the years, some key examples being Don Youngman (a former Deputy Commonwealth Statistician and Acting Australian Statistician), Ian Jones (an Acting Deputy and Acting Commonwealth Statistician), Tim Skinner (a former Deputy Australian Statistician), Bill McLennan (the previous Australian Statistician), Susan Linacre (a current Deputy Australian Statistician) and Dennis Trewin (the current Australian Statistician).

For the future, the methodologists and analysts of the Bureau will be involved in development of the National Statistical Service, including Bureau surveys, as it continues to live up to its charter of ensuring that statistics of high quality are available for the nation.

Staff development continues

The Ken Foreman staff development legacy continued throughout the 1980s and 1990s. His early handwritten staff training notes gradually became more formal, typed documents which remained the key reference books for all new staff. The field trips sadly petered out during the 1980s, but the old branch training course remained and was progressively updated to become training courses in survey methods and basic survey design. In 1984 a version of Survey Methods 1 was presented at the Australian National University. It reverted to an in-house course a few years later, mainly due to the problems of coordinating with the university calendar, although another attempt at joint presentation lasted from 1991 until 1994.

In 1983 the 'Statistical Services Papers' series was first released. Papers were circulated to colleagues in overseas agencies, and replaced the purely internal Statistical Methods Section information papers. The series survived until 1990, when it mutated into a briefer, more informal newsletter that still exists. Its focus turned more to providing highlights and

progress reports of work under way, rather than publishing research papers. The ideal of communicating the work of the division has remained, and in 1993 the working paper series was launched as a catalogued Bureau publication.

During the mid 1990s efforts were made to extend relationships with academic statisticians around Australia and overseas. In the late 1990s the division became the industry partner in a sequence of Australian Research Council grants. This proved very valuable. In addition the Bureau introduced unbonded 2nd and 3rd year scholarships at four universities, to encourage students into the discipline of statistics and to support the statistics departments by giving tangible evidence of the job market for their graduates. This has also proved successful, and though scholarships are unbonded a number of scholarship holders have since commenced work at the Bureau.



Left: Inspection of the CD3500 computer placed in the New Treasury Building in 1968.

Far right: Detail of an 80 column hand punch card machine.



Integral to the business
THE USE OF TECHNOLOGY IN THE BUREAU

chapter eight



Female key punching staff working in the Census Office in Canberra prior to the introduction of computers. Pam Kirkpatrick is at the bottom left of the photograph. Others identified include Joan Meech, Marie Thompson, Joan Stansfield, Barbara Nicholson and Mrs Martisius.

Leading the way

Few organisations can truly claim to have been in at the start of a new era, but this is true of the Bureau with the introduction of computing into Australia. Having extensive experience in using mechanical tabulators to compile statistics, the Bureau, along with Defence and the Commonwealth Scientific and Industrial Research Organisation (CSIRO), introduced digital computing into the Australian public sector. To support its foray into computing, the Bureau imported an international workforce, and instituted a comprehensive training system to develop its own group of locally trained computing professionals. This highly skilled workforce developed a world-class technology platform for the Bureau as well as significantly contributing to the advancement of computing across Australia and in the public sector.

Statisticians, like some other professionals such as engineers, tend to be comfortable and capable users of computing. Indeed, they have shaped future directions through a sometimes aggressive pursuit of new and advanced applications. Today computers are seen as an integral part of the Bureau's business, and the 'alignment' that so many organisations strive to create between computing and their business has always been a feature of the Bureau landscape.



Left: Operating the Control Data 3600 in 1966. The Bureau's first computers were located in the Government Printing Office in Kingston, Canberra.

Above: The main computer room, Cameron Offices, Canberra, 1974.

Strategic management

In the article ‘Development of Official Statistics in Australia’ in *Year Book Australia 2001*, former Australian Statistician Bill McLennan identified the continuous ‘... involvement of the most senior group of ABS management in strategic technology planning’ and ‘... adherence to a corporate governance model for IT’ as defining features of the Bureau’s approach to the management of computing and technology. He also considered technology as having played a critical role in driving change and productivity improvements since the 1960s.

Commonwealth Statistician Keith Archer set the Bureau on this path. His recognition of the potential of computing in supporting statistical work saw him select and sponsor a statistician, Digby Pridmore, to lead the Bureau’s entry into computing. Archer’s interest from the beginning ensured that computing would serve the Bureau’s statistical requirements. In evidence before the Joint Committee of Public Accounts on Automatic Data Processing (ADP) in 1966, Pridmore stressed that ‘... the present Commonwealth Statistician (Mr Archer) had not only acquired extensive knowledge of ADP personally but had directed his senior officers to undergo courses of training in this field’, and that Archer felt it ‘... incumbent on anyone who is associated with management to know as much as possible about ADP’.

General management involvement in computing was strengthened in the later part of the 1970s when newly appointed Australian Statistician Roy Cameron established a senior management committee (the Data Management Steering Committee (DMSC)), to oversee the Bureau through a major re-equipment exercise and the complete redevelopment of its supporting statistical infrastructure.

In 1987, then Deputy Statistician Bill McLennan revitalised, renamed and refocused DMSC as the Information Technology Steering Committee (ITSC). ITSC also absorbed TECCOM, a Technology Committee which had been established in 1983 to provide advice on ‘all significant acquisitions and uses of technology functions’. The term ‘Information Technology’ in ITSC’s title reflected the growing requirement to manage the increasingly wider suite of technologies and information available to the desktop, rather than manage single types of data on one technology.

ITSC evolved through another name change in the early 1990s (to become the Information Resource Management Committee (IRMC)), and this group continues to ensure that the Bureau derives value from its information and communications technology investments and that senior management and statisticians continue to participate in setting the directions for computing.

‘The philosophy behind our IT environment is that it exists to support “the ABS business”. We want our IT environment to be an enabler for new, more productive, ways of meeting our business needs. Because we are in the “information business” we regard IT as highly strategic. We put a lot of emphasis on a corporate approach to IT – we select strategies and technologies that we hope are the best fit.’

Jonathan Palmer (Head of Computing Services 2000 –present), ABS KM Strategy – Overview Document, internal paper, 2002.

MechTab

Mechanical and automatic tabulators and calculators with elegant names like the Millionar, Trio or Comptometer – which were manufactured by companies with names like Brunswieg, Egli, Marchant, Burroughs, and Powers Samas; and acronym names like BTM, ICT, ICL, IBM or ICR – represented the dominant technology in use in the Bureau for more than 40 years to the mid 1960s.

Punched cards didn’t even disappear when the Bureau acquired its first digital computer in 1963. During the 1960s and 1970s punch cards remained a primary method of input alongside punched paper tape, magnetic tape and even disk. For a few years while computing found its feet, mechanical tabulation even continued to match the productivity of the new computing technology. But by 1970 the Bureau had identified ‘punching’ as the weak link in its computing strategy – it was too ‘expensive, slow and a source of errors’. By the time the FACOM computing equipment was introduced in the early 1980s card punching was no more.

MechTab, as it was known, achieved its productivity through use of the American designed Hollerith 45 column punched card system, which had been developed to assist processing of the 1890 United States census. In the Hollerith system specialised machines designed for specific purposes undertook card punching, verification, sorting, counting or tabulating functions. Correspondence between London and the Prime Minister’s Office from 1920 refers to the Bureau’s ‘efforts’ to obtain tabulating

machinery and the millions of cards necessary to tabulate the census. There were difficulties in implementing such new technology – voltage, specific design requirements and of course cost – so the main tabulator was leased rather than purchased. The Statistician's Report for the 1921 census notes, however, that use of the Hollerith system sped tabulation considerably, and the 1933 Report notes that though more sophisticated machines were in use in other parts of the Bureau, the 1921 technology again served the organisation well.

It is likely that financial pressures brought on by the Depression held back the spread of the Hollerith system across collections, but by 1937 the more sophisticated 80-column system developed by IBM was in use. This 80-column system was used to process the 1947 census.

The new system brought little improvement in productivity, and it was only the timely introduction of four specially designed 'Census Trio' machines for the 1954 census (so called because they linked sorting, counting, tabulating and the printing of results) that again raised the bar. In combination with the introduction of 'mark sensing', which reduced the amount of preparatory work prior to processing, the 'Trios' lifted processing levels well above the 150 to 250 cards per minute outputs which had characterised processing for the 1921, 1933 and 1947 censuses. Machine changes brought about by the integration of the state statistical bureaus with the Commonwealth Bureau in the late 1950s were also a considerable distraction. Only New South Wales used the 80-column

format: all other state bureaus used the 65-column card format used by Powers Samas equipment.

The 'Trios' were again used in 1961, and despite the growing sophistication and continuing evolution of tabulator equipment (the Bureau had over 100 MechTab machines in the early 1960s), the technology was always going to find it difficult to match the capability that would eventually be achieved through the application of computing power. The last large machine appears to have been an ICT1201, a hybrid calculator/computer, which came from Treasury around 1960 (the machine was so big that it was housed in its own room at the Bureau's Kingston office). The ICT1201 was used to print tables for publications released in the early 1960s, including the 1961 census.

The pure volume of physical processing in MechTab almost defies imagination. For the 1921 census 193.24 million cards passed through the sorters, 115.64 million through the counters, and 2.56 million through the tabulators. Fifty-seven young women 'key punched' the data for the 1921 census. For the 1933 census the number increased to 62, under the supervision of a female supervisor lent to the Bureau by the Commonwealth Bank. Even greater numbers of male temporary clerks prepared the information for keying onto the cards.

Overseas Trade statistics, the first collection selected for conversion to the computing platform, required 200 000 cards to be processed each month as a MechTab process. Annually this meant 2.5 million cards passing through an average of 40 machine processes –



Mechanical tabulation equipment used for the 1954 census. A sorting machine is in the foreground.

that is 100 million processes to meet the requirements of one collection. There were over 150 collections at this time. MechTab supervisors were ingenious, developing processing techniques that substantially improved throughput without having a significant impact on the quality of the data.

The range and composition of MechTab's staffing structure is also an area of considerable interest – during the second decade of the century we first see the use of the role of 'Computer'; in the 1920s 'Machine Tabulators'; and from the 1920s through 1950s the positions of 'Machinist' and 'Statistical Tabulator'. Many of these staff were female. A scan of the Bureau's staffing structure in 1951 reveals that of the 158 female staff positions in the Bureau's structure (out of 431), almost all were working in either MechTab or the Typing Pool.

Satellite computing – the Control Data platform

The Bureau commenced its evaluation of computing in June 1957 when then Deputy Statistician Keith Archer, who had become aware of the recent use of computers at the US Bureau of the Census, sent some staff to attend the 2nd Australian Computing Conference. The conference was convened by the Department of Supply and held at the Defence Weapons Research Establishment in Salisbury, South Australia. A report on the Salisbury Conference records that it provided ‘good coverage of the present position ... of computing from the points of view of the mathematician, engineer, designer and programmer’, but that a ‘most serious omission was any systematic discussion of the organisational problems associated with the introduction into an establishment and the running of a computer’.

The emphasis on the roles of computing staff probably reflected the priorities of the organisations investigating the potential of computing at this time, which was primarily research in a specific application or area. The report reveals, however, that from the beginning the Bureau’s interests were different. Its requirement was to use computing processing power to undertake day-to-day calculations across a range of research topics (collections) and to free up clerical staff for other duties, including further research into specific statistical problems. It also reveals the extent to which the author considered the involvement of statistical staff as essential in helping identify what data to collect, how to collect them, and how to transform and output them. In a significant part of the report subtitled ‘Organisation’, the necessity of managing the complete statistical operation is well considered.

The next move was to send Digby Pridmore to the United States to study computing methods and techniques at the US Bureau of the Census. As well as studying in Washington during 1958–59, Pridmore examined similar systems in Britain and Canada. At the end of 1959 Pridmore prepared a report, *Working Paper on Electronic Data Processing Investigations at the Commonwealth Bureau of Census and Statistics*, which became the blueprint for his team’s analysis of the Bureau’s computer requirements over the next three years. The time involved in the evaluation seems considerable, but the technology underpinning computing was evolving quickly, and by holding off a little longer the Bureau benefited from considerable improvements in the capability of the technology.

Treasury authorised the purchase of equipment in August 1962 and a tender document was issued with tender responses due by 13 December 1962. The document outlines an ambitious vision. Paragraph 1.04 (2) sought the supply of a ‘... permanent communications network with automatic transmission of data between the computer centre and the five mainland state capitals’ – something not achievable for another 20 years. Until then the Bureau had to rely on the daily despatch of tapes between offices. As backup, paragraph 1.05 (1) required the supplier to ‘... agree to supply five satellite digital computing systems if ... required’ and (2) ‘that the peripheral equipment for the satellite systems shall be compatible and interchangeable between satellites and the computer centre’. This compatibility resulted in the Bureau being able to develop and run multiple applications in parallel across its computing platform at a time when most organisations were using computers for a single application or purpose. The compatibility also allowed programmers to ‘migrate’ between offices to also develop, refine and test their code.



Digby Pridmore heading to the United States in 1958.

‘One of the ways that you did this was to just take advantage of the spare capacity of the State machines and go and work in a State Office, so I went with Alan Taylor and worked in the Melbourne Office a couple of times and then of course, in later years, did quite a lot down at the Tasmanian Office because you had so much more freedom to submit runs and you didn’t have to fit in with huge production’.

Bill Egan (Head of Computing Services 1987–92) interviewed in 2003.

The idea of placing computers in all offices has been attributed to Sir Lennox Hewitt, then a Deputy Secretary at Treasury.

'He said to Keith [Archer] "... we've got offices all over Australia and so have you. Why aren't we thinking of state installations as well?" ... Well, Keith took this on board and said to me "... you had better look into that".'

Digby Pridmore (Head of Computing Services 1960–68) interviewed in 2003.

The evaluation report shows that feasible tenders were received from the English Electric Company, Control Data Corporation (CDC), IBM, Honeywell, and ICT-Univac. Other tenders were received from NCR, General Precision and General Electric. The cost of implementations tendered ranged between £1.6m and £3.0m, with the satellite components of most tenders representing at least half of the investment and sometimes more. The tender was awarded to the Control Data Corporation of the United States and contract negotiations commenced in June 1963.

'In the end it came down to Control Data. There was no doubt at all about it, that was the right one'.

Digby Pridmore interviewed in 2003.

During the negotiation stage it became apparent that another government agency, the CSIRO, was interested in obtaining the same computer. By the time negotiations were completed in November 1963 a significantly better deal had been negotiated for the Bureau. The final cost of £2.145m (US\$4.781m) was not significantly different to the tendered bid.

'... it went ahead because we got a good deal.'

Digby Pridmore interviewed in 2003.



Dean Malcolm at the Control Data computer in the 1970s.

In the intervening six months Control Data had released a series of much more powerful mini-computers and these were offered, instead of the tendered machines, for use in the proposed satellite configuration. This circumstance benefited the Bureau greatly and helped meet the organisation's requirement for 'data processing facilities ... adequate for its foreseeable needs, with moderate expansion, over the next 10–15 years'. The majority of the Bureau's Control Data equipment was eventually decommissioned in the early 1980s – a couple of years past the Bureau's originally foreseen 'use by' date.

By the end of the decade the Bureau's Computing Services Division had been renamed the Computing Service Centre, reflecting its services to more than one agency.

The Canberra installation was in place by December 1964 and the major state installations by the end of 1965. An article published from the time (in *Computers and Automation*, May 1966) records that in terms of computing power the Bureau's installation at this time was larger than about 90% of those either installed, or on order in the United States. The approach taken to harnessing all of this new computing power was to get as many of the statistical applications automated as possible.

'... our systems lent themselves to being implemented one by one ... there was an intense program to lift all the old MechTab collections off onto computers as fast as possible.'

Bill Egan interviewed in 2003.

A computing powerhouse

Having secured the computing environment it needed to redevelop its statistical services the Bureau was faced with the problem of using the quite extensive spare computing capacity it had acquired.

Arrangements were quickly made to undertake bureau type services on behalf of other government agencies. By mid 1966 the Bureau was undertaking work for the following departments and agencies: Health; Treasury; Taxation; Supply; Superannuation Board; Public Service Board; Civil Aviation; and Repatriation. Much of the negotiating and preparation for this work had occurred in formal and informal discussions in the Inter-Departmental Committee on ADP which had overseen the acquisition of computing technology since 1961.

The scope of work ranged across personnel, administrative, accounting, financial and more specialised work, and was undertaken in all Bureau offices. The Bureau provided the infrastructure and operating staff, the client departments the system design, data preparation and, where necessary, specialised stationery.

Clients were allocated blocks of time – the day and duration clearly identified as the machines were essentially linear in terms of processing jobs – and jobs were processed according to a negotiated priority between the client agency and the Bureau. In evidence to the Joint Committee of Public Accounts on Automatic Data Processing, Digby Pridmore, head of the Bureau's computing, assured the Committee that 'the Bureau had succeeded in meeting all target dates set by client departments'.



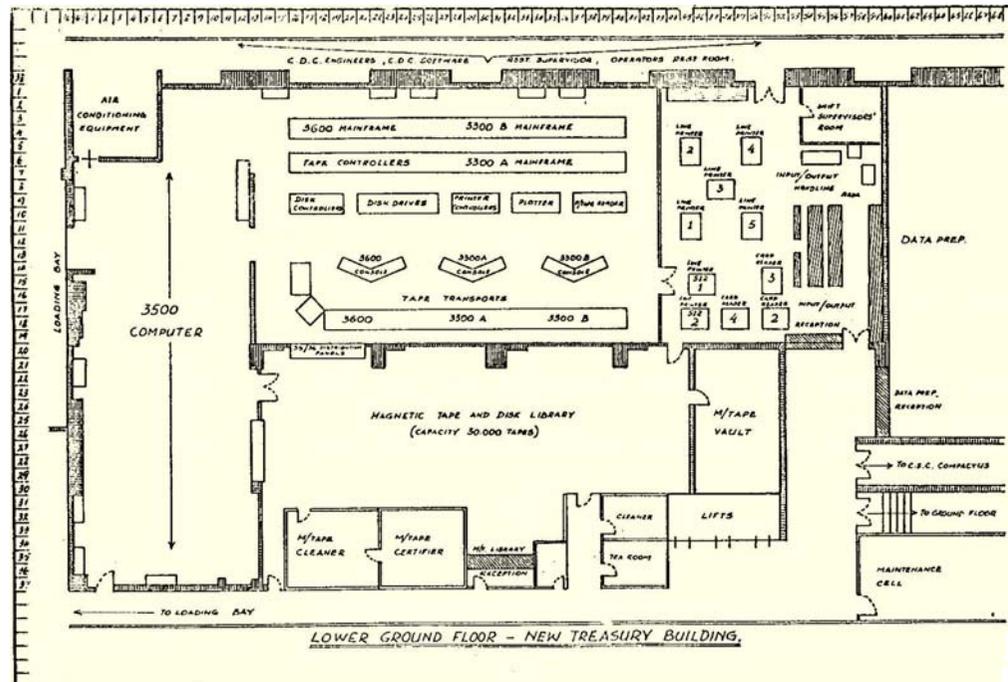
Demand for the Bureau's computing services was considerable and by mid 1966 the machines in Canberra and Sydney were operating to capacity. By the end of 1966 nearly every state office was operating at least two shifts (involving between 14 and 16 hours using overtime) and the larger offices three shifts (22 hours per day). Maintenance was scheduled for weekends.

Of the 22 431 hours of operation of the network to 31 May 1966, Bureau applications accounted for 14 479 hours; Treasury applications 2 278 hours; Taxation applications 2 290 hours (over time Taxation work came to occupy whole shifts); Superannuation and Defence Forces Retirement Benefits Boards applications 856 hours; Department of Health applications 2 181 hours and other users 347 hours.

Ed Miller, a key participant at the time, has remarked that it 'was a heck of a big workload'. But the Bureau was well prepared; much business analysis work had been undertaken, and statisticians seconded to the tender project were returning to the subject matter areas with an understanding of their processes, and were implementing them through systems design. By census date (30 June 1966), 41 applications had reached operational status, and the new computing environment resulted in output from the 1966 census being six times greater than from the 1961 census.

'...When I got here I thought it was fantastic that for every statistical collection (well I don't know every, but the majority), there was a document, a book, describing it and all the inputs and all the outputs.'

Ed Miller (Head of Computing Services 1984–87) interviewed in 2000.



In the late 1960s the Bureau moved into the new Treasury Building. This floor plan shows the placement of the computers in the new building. Note how much space has been set aside for the new 3500 computer.

A colossal feat

Just about all of the Bureau's applications (operating systems, statistical applications and the systems to manage peripherals) were written from scratch by the growing number of central and state office programming staff who had been either recruited or developed through the Bureau's training program. Programmers tackling individual tasks were unable to draw on any established

body of knowledge or experience, but instead used 'native cunning, persistence and ingenuity'. It was a time of 'learning together', and on the first machine, '... you could do everything'. The 160As, the least powerful of the computers that had been purchased and were specifically deployed to manage the Bureau's large print loads, had only 8kb of main memory. Tight programming was the order of the day, with an enormous list of in-house software developed to operate the machines and process

the applications. To manage the production process a special group, Production Staging, was established. Until the development of self-scheduling service functions for batch jobs this group looked after the tape libraries, job scheduling and queuing, and essentially provided the interface for most users to the system.

Software from scratch

From the arrival of its first computer the Bureau has had a passion for developing sophisticated software. Initially this was due to necessity – as some of the earliest computers used by the Bureau (such as the Control Data 160As used in the 1960s) arrived 'cold'. They had none or only a rudimentary operating system and no suite of software beyond a roll of paper tape which contained the code for an assembler and some device drivers.

So the Bureau was forced to develop much of its software as the market for the types of statistical applications required by the Bureau was small and for many years not considered very fertile ground by commercial software developers. It would also be fair to say that the Bureau developed its own software because it could – clever software can only be written by clever people and the Bureau, in common with several other leading statistical agencies, has continued to maintain a workforce of skilled programmers. When the Bureau has had a need not able to be met by the commercial software market the not unnatural response has been to develop something in-house.

The most notable and sophisticated systems developed by the Bureau have usually been developed with the aim of making it easier for people who are not expert programmers to undertake complex, often repetitive, tasks for themselves. Perhaps the earliest example of this was the development of the Table Generator, and its successor Report Generator, in the mid 1960s. The Bureau has an almost insatiable appetite for adding up numbers to produce tables – an appetite which could clearly not be satisfied by a small pool of programmers crafting new code for each individual table. The solution was the development of the Table Generator, a 'generalised' and 'end-user drivable' system that, in the words of Ed Miller, 'could be used by ordinary mortals without too much trouble'. If we follow through the evolution of Table Generator to its modern day equivalent we arrive today at the Publication Production Workbench (PPW) system which automatically generates complete statistical publications.

Table Generator was followed by many other sophisticated 'generalised systems' catering to every phase of the statistical life-cycle. Over the last 40 years

the Bureau has developed generalised tools for survey design, collection management, input processing, estimation, seasonal adjustment, publishing and analysis. Major systems have usually been built with the latest tools available, which has meant that the Bureau has often been a significant first adopter of new technology within government. In many cases the Bureau's adoption of a commercial product has given other Australian organisations the confidence to invest in the same toolset – examples here include SAS, ADABAS/Natural, ORACLE, SQL Windows, SuperCross and Lotus Notes.

Some of the larger Bureau-developed systems, particularly the various generations of the business register and population census processing systems, consumed 100+ programmer-years of effort – massive and ambitious projects that generated commensurate savings. In 2005, even the larger system developments tend to involve fewer than ten programmers but there are a lot more applications, more than 250 significant systems tended by a workforce of more than 200 programmers.

Throughout the late 1960s and early 1970s the Bureau's hardware environment continued to expand – equipment upgrades and additions across the network supported the enormous printing and processing loads for both the Bureau and a growing number of customers of its Computer Services Centre. By 1972 many of the smaller statistical applications had been automated and the opportunity was taken to develop some new ideas and applications. The Bureau began investigating the building of centralised databases (including a Time Series database) and directed some effort into trying to develop a series of generalised applications and systems to further integrate its statistical work and improve productivity.

Some small scale generalised survey processing systems were developed in the late 1960s. The first large generalised application systems were a generalised interrogation system (GENINT), followed by an even more ambitious Generalised Survey System (GSS) project to develop a generalised survey design and processing package. GSS was a little too ambitious in its aims, but GENINT saw service across a range of hardware and was eventually replaced in the 1980s by Programming Language for Edit, Amendment and Tabulation (PLEAT). By the late 1970s the Bureau had also started building administrative applications; one of its most successful was NOMAD, an application which was adopted by the Public Service Board and went on to be used in many other agencies.

The Cyber

Another initiative coincided with the purchase of a Cyber series computer from CDC in 1974. The Cyber 72 mainframe was disk based, rather than tape based, and provided interactive visual terminal access instead of the more cumbersome method of offline scheduled job stacks. The Cyber platform, which operated in one form or another to 1992, was dedicated to processing end-to-end output from the various integrated economic censuses that the Bureau introduced in the late 1960s. It was an innovative platform in a number of ways – it inaugurated the Bureau's use of multi-disciplinary development teams (i.e. a client-driven systems development model) – and from the programmers' viewpoint the machine featured a text-editor that allowed interactive entering and amending of source code.

Looking back it is remarkable to think that programming staff had already worked for ten years without such facilities, and this was to remain the case for data input for a good many more years. The majority of applications remained tape based and consequently kept a whole set of production staff busy managing tape drives, tape libraries, card readers and other types of peripherals. A minor revolution did occur with the installation of MAK (Multi-Access Keyboard) data entry equipment in 1976. Until then, data entry was undertaken using cards or punched paper tape (which had to be keyed and verified before being transcribed to magnetic tape or disk).

Getting the job done

'In the early 1970s, a programmer usually only had one chance per day to test or run their computer program. The "job" went into a "stack" in a card tray, and was taken to the computer room in the Treasury Building, where it awaited its allotted slot to run, usually overnight. One way for a programmer to crib another run in each 24 hours was to ring the computer room in the early hours of the morning and ask if his/her job had crashed. If so, the programmer could drive in to work, fix the problem and have another run at the end of the night shift, when there was often some idle computer time. Since many junior programmers lived in rental accommodation without phones, even the phone call involved getting up and going down to the local shopping centre to call. One keen young man without a car was even known to run from North Canberra to Barton to turn his job around.'

Ann Bromich, personal comments 2003.

Re-equipment

In 1976 the Bureau issued a tender for re-equipment. Despite considerable success with its computing implementation the Bureau had 'backed the wrong horse' for the longer term. If the Bureau was to retain leadership in the computing world and benefit from the increasing array of software and other tools that were being developed it needed to become IBM compatible. The agency had also come to the realisation that, without effective links between the satellites on its network, the cost of supporting an ageing computing infrastructure across the states was simply too high. The tender sought to overcome this by consolidating activity into a Central Computing Installation (CCI) in Canberra which would continue to support the capacity of the agency's state offices through a data communications network. Unfortunately problems with the tender process stopped the Bureau taking possession of its new machine until 1980.

'... at one point somebody estimated that the two-years delay in hard quantifiable costs, leaving out all the intangibles ... was at least \$6 million.'

Ed Miller interviewed in 2000.



(L to R) Digby Pridmore, the first head of computing in the Bureau; Brendan Harper, head of computing in the late 1970s and early 1980s, and the former Commonwealth Statistician, Keith Archer. Taken at the farewell for the Victorian's Office's CDC3200.

As a consequence the life of much of the Control Data equipment was extended considerably, with the majority of state and central office equipment not decommissioned until 1982–83. When the big mainframe 3600 was retired after nearly 18 years of service in 1983 it had survived two major 'transplants', first to the Treasury building in 1967 and then to Cameron Offices in Christmas 1973. It had seen 100 000 hours of working life (almost 22 hours per working day) and supported the work of 15 agencies at various times. Throughput involved a peak of 3 000 jobs per month with an average duration of 12 minutes per job. Hardware reliability was over 98 per cent, and it has been estimated that the 3600 generated enough heat over its lifetime to service 1 500 average sized three-bedroom houses for a year. Similar stories could also be told for the state office computers.

Centralised computing

From a computing perspective the major differences between the FACOM (the Australian brand name for Fujitsu Computers of Japan) and the Control Data platforms were a massive increase in outright processing power; consolidation and centralisation of nearly all computing activity onto a single machine; the availability of a database management capability (ADABAS) to support retrieval for tabulation and enquiry purposes; access to a new level of software support using advanced user languages to support programmers and end-users; the replacement of tape input/output by direct entry using terminals; and improved access to data, programs and applications through the use of high-volume storage disk and a linked Mass-Storage facility (MSS) which used magnetic cartridge instead of tapes. This last feature was an innovative aspect of the new environment and enabled the Bureau to build and configure its systems as though they operated from disk. In its first few years this innovation achieved its objective of lowering operating costs and supporting the development of more responsive and flexible applications.

Some things did not change – a large 'computer room' operating three shifts a day was still required, with numerous attendant staff required to prepare content for processing. During the transition period and at least until the early 1980s key-punching remained the primary method for preparing programs and capturing data. Despite having acquired some capacity to input data into machine readable form through terminals in the 1970s, it was only when the Bureau upgraded to Nixdorf data entry equipment that it began to see significantly different work spaces, with work areas being redesigned to incorporate banks of data entry points and other networked devices.



The Bureau's first FACOM computer arrived in the Bureau in 1980.

By mid 1984 about 300 terminal devices were in place across the Bureau's eight widely separated locations and data entry (key to disk to tape) was being undertaken at seven separate data entry installations.

The change to greater amounts of keyboard input work and the coming of word processing was accompanied by an unforeseen occupational health and safety issue, the emergence of repetitive strain injuries. By 1985 more than 20 per cent of data processing operators and word processing typists across the Australian public service were affected, and a task force was convened to examine the problem. Its report resulted in the better definition of ergonomic standards, job redesign and training in appropriate exercises. Due to the extensive keying requirements of statistical work, and especially the proximity of the 1986 census, the Bureau quickly adopted the recommendations and implemented strategies to overcome the problem. By 1988 the Bureau was able to report a continuation of the fall in the incidence of this type of injury. To this day, and especially in its census data

processing centres, the Bureau continues to emphasise preventive exercising, taking breaks and early reporting of symptoms.

The computer arriving in 1980 was a FACOM (Fujitsu Computers) M200 at a cost of over \$8m. A supporting interim network was also installed, with plans for it to be replaced with a specially designed network at a cost of \$4.2m.

'... The evaluation in my book – and I was the team leader – was a pure price performance thing.'

Ed Miller interviewed in 2000.

Both the first tender issued in 1976 and the second tender in 1978 sought to bundle the business of the Bureau and the Department of Trade and Resources, but delays in the evaluation process and diverging technical requirements saw the tender split. This was perhaps fortunate as demand and the ability to absorb additional capacity were issues of constant concern throughout the 1980s, with the mainframe significantly upgraded twice.

In 1984 the machine was upgraded to an M382 and at the end of the decade a new M780 joined the M382, which was redeployed to exclusive support of the 1991 census. The real challenge in the 1980s was not in the capacity of the mainframe to process work, but rather in getting the necessary development work undertaken, and scheduling and submitting jobs for processing.

It was hoped that the new network would provide a level of functionality not then commonly available, but which was considered essential to support the Bureau's objectives of providing data capture, editing and amendment features to its state offices. In proposing removal of distributed computers from the state offices (a feature of the Control Data environment), the Computer Services Division had had to assure staff in the state offices that it would be able to process their work, which primarily consisted of remote job entry and bulk input/output. However, the division struggled to put in place a network that could support local editing as well as printing, file handling and job submission. Delays and problems occurred in developing the Special Network Software (SNS), and the first release had to be withdrawn from service due to stability problems. Eventually the required functionality was achieved, but not until many end-users had found rather ingenious ways around their problems.

'... when we went for a communications system we were actually maybe three years or four years too early

... But we couldn't wait for that. We had to have a network.'

Ed Miller interviewed in 2000.

In retrospect the experience with development of the Special Network Software was one the Bureau has encountered a number of times – a characteristic of the 'special problems' associated with developing statistical

software. The functionality or software necessary to achieve the Bureau's aims did not exist commercially and needed to be developed or (in the case of statistical software) acquired from other national statistical agencies which faced similar issues. The development task seemed straightforward, but was found to be more complex than expected and in the meantime requirements elsewhere resulted in such functionality eventually becoming available commercially. Fortunately for the Bureau, analysis revealed that even with the ability to work interactively, statistical processing – for reasons of cost and timeliness – could largely remain a batch process. This made it possible for prime-time computing access to be committed to support development work, application management and online job submission for later execution.

During the 1980s the Bureau migrated through a few versions of network software. Following the initial interim network (provided by Digital Equipment Corporation) and its replacement, the SNS, the Bureau implemented FNA (FACOM's equivalent product to IBM's SNA software). Job submission to the FACOM computer was through JOL – an Australian developed product that gave the end user control over job submission and processing.

In late 1988 the Bureau started implementing Vines network software provided by Banyan. It was on the Vines network that email really started to take off, and Vines remained in place as the core piece of infrastructure on which the Bureau integrated its mainframe, Unix and office-computing environment until the new century. Vines Directory features in particular enabled the Bureau to achieve levels of integration well in advance of other organisations in the early 1990s.

Small scale technology

The beginnings of the personal computer (PC) era can be traced to 1983 when a number of different types of stand-alone microcomputers were installed in the Bureau on a trial basis. Computer Services Division were initially opposed to the use of small scale technology for mainstream applications, and many staff of the era would still hold the view that personal computers were introduced into the Bureau in spite of the Division. While the Division soon recognised the potential of the new technology and its ability to eventually play an important role in the Bureau's array of facilities, it was concerned about supporting a technology whose capacity, form and ability to integrate with the Bureau's other technology, statistical systems and data holdings was still to be established. The 1984–85 Annual Report records that the 17 microcomputers in place at the time were used for minor administrative and statistical tasks of a type considered unsuitable for the main computing facility – but included compilation of the consumer price index, some preparatory compilation of national accounts input data, amalgamation of public authority finance data, some small complete statistical systems, and decision support functions for some executive staff.

Initial pressure and support for the introduction of PCs came from outside Computer Services, and particularly within Coordination and Management Division where there was a strong need for spreadsheet and analysis facilities to support project planning and resource management, as well as an emerging recognition of the potential of PCs to support what later came to be described as 'office automation'. Personal computing of course was a technology within the reach and budgets of many senior staff, and within the Bureau many of these new users banded together to arrange training and share

their experiences and knowledge. The result was that pressure for the new technology continued to grow. But overall the Bureau was able to maintain a corporately managed approach to the purchase and deployment of PCs with the result that by the end of the 1980s, a time when the PC and its software were coming into their own, the Bureau was able to provide a well managed, integrated and supported network for PCs and their users.

A significant intermediary role in the Bureau's office automation history was played by equipment from Convergent Technologies (CT). Although not PCs, CT units were designed for desktops. They came with a well-integrated personal and organisational productivity software suite (word processing, calendar, spreadsheet, email) and could be networked. The technology came to be both a source of inspiration and frustration – it showed the Bureau what a well integrated 'office automation' suite should look like and was used extensively but unfortunately was not strategic enough to deploy widely as an alternative to PCs. Its implementation also put the Bureau's executive on a different technology 'island' to the majority of staff (though it brought them familiarity with personal computing), a gap that was not easy to bridge until the way became clearer when the Bureau installed Microsoft Works on its PC fleet in 1990. Works and its graphical user interface became the 'office automation' standard for the Bureau until the introduction in late 1992 of Lotus Notes. Notes finally provided the Bureau with a platform that could support application development as well as the personal and organisational productivity the Bureau was seeking to achieve at the personal computing level.

Software environment

The prime language tools used in the FACOM environment were TPL (the generalised tabulation language based on the Bureau's Table Generator TGN software that had been developed in the mid 1960s), and two fourth generation languages – NATURAL which came as part of the ADABAS database inquiry facility, and the statistical analysis package SAS. The Bureau was the first major user of SAS in Australia and the application, which is still in use across the agency today, played a significant role in supporting statistical staff in the development of systems to support the analysis and presentation of statistical data. Development was also undertaken to link TPL to the data dictionary and directory facilities that came as part of the database environment. Bureau efforts with the data dictionary were primarily directed at assisting processing systems derive information about the data rather than supporting 'look up' by staff. Throughout the 1980s, catalogues and indexes to ABS statistical content remained on word processors rather than in the data dictionary systems, hampering Bureau data management objectives to some degree.

CYBER platform

The main alternative processing platform during the FACOM era remained the Bureau's CYBER and its in-house developed GENINT end-to-end statistical processing software. For the first half of the 1980s the CYBER operated in parallel with the main environment, while the organisation grappled with whether to port the GENINT software to the FACOM environment, or to upgrade or replace the CYBER. Through the early 1980s the CYBER 72 struggled but remained adequate to the task, but by the mid 1980s a decision was needed on its future. The decision taken was to move all systems off the CYBER apart from the economic censuses system IESIS (Integrated Economic Statistical Information System), and to upgrade the hardware to another Control Data computer, a CYBER 180/810. The CYBER processed the economic censuses until it was decommissioned in 1992.

The search for an 'integrated' statistical environment

In the early 1970s methodologists Ken Foreman and Alan Taylor visited the United States to investigate the potential for the use of database management systems in organising and managing statistics. On their return they argued persuasively for the need for the Bureau's statistical staff and management to assert strategic and technical control over such technology. This understanding of the potential for using database technology to improve productivity and enhance analytical and statistical output capabilities can also be seen in the recommendations of the Committee on Integration of Data Systems (Crisp Committee) and in the establishment within the Bureau in 1976 of a Data Management Project Team under Alan Bagnall.

'... We were fortunate that we had just had our new Statistician appointed ... and he was obviously interested in ... the things that I was saying ... about a corporate value in our data and our statistics ... it fell on very fertile ground.'

Alan Bagnall (Head of Computing Services 1976) interviewed in 2001.

The initiative quickly evolved into a more comprehensive effort and in 1977, in conjunction with the establishment of the Data Management Steering Committee (DMSC), a Data Management Branch was established to develop Bureau efforts in this area. The role of the Committee and the Branch were to provide strategic direction, manage, review and ensure appropriate involvement of stakeholders in major system and technical computing



Nick Ryder checking a Fujitsu impact printer which was part of the production facilities in the computer room in Cameron Offices in the 1980s.

decisions. A major catalyst was the Crisp Committee's recommendation that the newly created Australian Bureau of Statistics develop databases to better support integrated statistical systems. Integral to the Bureau's approach was a strong project management structure built on a comprehensive approach (the Systems Development Methodology) to the management of technical projects.

'... Statisticians were always a jump ahead of the general population anyway in terms of capacity to embrace computing ... So ... I think from an early stage you had the situation that in many respects the subject matter areas were pushing IT people rather than having to be led.'

Bill Egan interviewed in 2003.

In effect these initiatives brought the process of managing technology into the Bureau's main work program. However because of the magnitude of the task of converting over 160 statistical collections from the CDC to FACOM platforms, the then Commonwealth Statistician Roy Cameron decided to deploy some of the branch's resources to assist with the project management of this task. Therefore a significant proportion of the Data Management Branch's effort was diverted into managing the transition of systems. Nevertheless, in a real test of the ability of the organisation to absorb new technology effectively, the changeover to the vastly more sophisticated and powerful new computing platform, which involved over 1,000 staff years of work, was managed very successfully, so that the Bureau's statistical

service to its clients was maintained seamlessly throughout the process.

In attempting to establish such an environment, statisticians were trying to find ways to store and access very large volumes of data in a variety of ways; apply a variety of functions to the data; maintain flexibility over the data, including facilitating output and access, and minimising maintenance burdens and costs; offer system designers a range of choices in applying technology to their particular task; and involve users in the design, operation and evolution of their systems.

The report of an external consultant suggested that the task was at a level of complexity above anything the Bureau had attempted with the Control Data platform. This generated considerable debate within the organisation about what approach should be taken. The computing professionals advocated a pragmatic approach and argued for implementing on the basis that much could be achieved quickly, replacing later as necessary (similar to the approach taken in the early 1960s) – this was termed the ‘Frankenstein’ approach. Some of the statisticians, however, argued that with the opportunity to re-equip, the value of starting from scratch and designing and developing a system to achieve as much as possible should be considered – this was termed the ‘Baby’ approach. Though an early Data Management strategy paper recommends the ‘Baby’ approach, the Bureau in the end chose a middle path while demonstrating its commitment to managing its statistical data by the establishment of the Data Management Branch.

The Bureau made a conscious strategic effort to involve its statisticians and clerks in use of its new technology platform, giving them responsibility for managing their systems development projects as well as access to user oriented development tools to build their statistical systems. The strategies developed out of the recognition that there needed to be an increased understanding and level of control over statistical production processes by the management and staff responsible for producing statistics. It was also an acknowledgement that it was probably more productive to focus specialist computer staff on administering and continuing to develop the environment.

Over time, user involvement became more sophisticated, moving from broad project management to heavy involvement in systems analysis design and implementation. Application systems interfaces or ‘monitors’ eventually gave statisticians control over the application functions to be performed and the data on which functions were to operate. End user usability came at a cost however; thousands of lines of code supported the ‘monitors’ in addition to the code required to run the application itself. Eventually though these repeatable processes came to be stored and reused as generalised processes with only minor amendment.

During the 1980s, and following on from the massive amount of work undertaken in migrating to the FACOM environment, the Bureau again began to debate the matter of data management, a consequence of the costs of database management technology and its impact on machine use. The issue came down to whether

integration across processing systems was really needed for disparate systems. Alternatives offered at the time, in terms of distributed computing power and standard software, had to be compared to the cost of continuing to develop and maintain in-house developed software. There were advocates on both sides of the debate.

Within the Bureau, data management has since become an important parallel aspect to information technology management, reflecting a growing understanding of the value of managing and organising statistical data for efficient input and output and to facilitate the assembly and confrontation of relatable data sets. The long-term benefit of the early conceptual work undertaken by Foreman and Taylor ignited a train of thinking that was developed in the early 1990s following a visit by a Swedish data management expert, Professor Bo Sundgren, and is today being realised in the design of the Bureau’s Input and Output Data Warehouses.



A Toshiba laptop bought by the Bureau in 1990.

The mid 1980s to the present

The most obvious difference between the Bureau workplace of the mid 1980s and mid 1990s was in the amount of desktop-based hardware present. In 1985 the agency had around 600 terminals (mostly organised in banks of terminals or data pools). In comparison, by the mid 1990s all Bureau staff (3 000) had personal computers on their desks. This desktop used a graphical user interface instead of a character-based interface and ran a wide array of personal and organisational productivity software. It operated across an integrated mainframe, mid-range and desktop computing environment and provided access to potentially hundreds of applications.

Remarkably, the change was not driven by the need to provide improved access to statistical applications. In the early 1990s most statistical processing was still being batch processed on the Bureau's Fujitsu M780 and later its Fujitsu GS8400/30 mainframe, though there was an increasing trend towards distributed processing for both statistical and administrative processing. Rather, the forces operating were driven by broader public service workplace reform initiatives and the drive for productivity improvements. Public servants of the early 1990s were required to be multi-skilled and were expected to undertake many of the day-to-day administrative tasks once performed on their behalf. Technology facilitated this process through the provision of user-friendly personal productivity software, continuing increases in processing capacity and falls in the cost of personal computers.

Working across Australia

The infrastructure for this distributed yet integrated environment was the agency's Banyan Vines network, which had been selected in the late 1980s. The Bureau's growing distributed environment required a product that would facilitate connectivity across the country, provide good network management and allow easy end-user access to basic print and file sharing functionality. Banyan and its directory service, StreetTalk, provided such capability, allowing staff to access any resource at any location as if it were connected to their PCs, something taken for granted now but which was not so easy then.

Selecting Banyan was the easy part. Acquiring it proved a much harder task. In the late 1980s there were two options for acquiring hardware and software in the Australian Public Service, going out to a full tender or buying from any government contract in place under the conditions of that contract. From a Bureau point of view, tendering was not attractive due to the costs involved and the likelihood that Banyan would not even tender, as it had no formal presence in Australia at that time. Finding an existing Banyan panel contract, however, was quite an exercise. No Commonwealth or state government contracts were in place, but fortunately it was found that the Sydney County Council (an electricity utility) had a small number of Banyan servers installed and that the Bureau could use its contract.

The choice of Banyan had tremendous benefits for the Bureau and was a clear vindication of the 'corporate approach to managing IT'. While other agencies struggled with networks and hardware that could not communicate

with one another, the Bureau's staff moved freely from workstation to workstation, and office to office, to undertake their work seamlessly. Introduction of dynamic TCP/IP (Transmission Control Protocol/INTERNET Protocol) in the early 1990s further facilitated management of the PC fleet and enabled them to communicate with the agency's UNIX based applications that required TCP/IP addresses.

The UNIX platform

The Bureau became interested in UNIX for several reasons. At the end of the 1980s the mid range computer market had become very competitive and many everyday business applications (accounting, finance, personnel) were being written for the platform. UNIX also offered the opportunity to move away from the monolithic central processor model, with its huge replacement costs, to a distributed processing model based on smaller incremental outlays (scalability) and a quite rapidly developing path for processor power. Importantly for database development, applications of many relational database vendors were making UNIX their development platform of choice. In the end it involved something of a leap of faith, but the money was found to invest in this new area.

An interesting debate followed on what hardware the Bureau should acquire. A proposal was made for the Bureau to select a 'strategic vendor' and stick with it for a standard platform in preference to selecting machines for particular purposes. The strategy the Bureau adopted was to create a shortlist of vendors, develop some benchmark

tests that would provide a guide to performance, then run them on the short-listed vendor machines. Finding a benchmark was a challenge; in the end the Bureau obtained a benchmark from the New South Wales Road Traffic Authority which simulated a mixed workload of batch and online work with simple and complex transactions and which could be varied. Tests were conducted on machines from Hewlett Packard, Sequent, SUN, Pyramid, NCR and Nixdorf. Some machines could not run the benchmark at all, and others had difficulty with batch processing, an important selection element. Finally SUN Microsystems was selected, and the Bureau has used it exclusively to run its primarily Oracle-based mid range databases to this day. The first applications to run on the UNIX platform were computer assisted telephone interviewing for the retail survey, some larger financial and personnel applications and the agency's library system, which became available to all desktops in the organisation in 1991. At one stage in the mid 1990s the Bureau had 20 UNIX servers running statistical, administrative and external database services, nearly all running Oracle.



The Olivetti Quaderno is a palmtop notebook around 21cmx14cm x 3cm in size. It was released in 1992 and would probably have been bought by the Bureau for evaluation purposes.

An enabling desktop environment

The utility of the Bureau's current information environment and the great productivity gains it has generated were an outcome of the realisation in the early 1990s of an office computing strategy based around Lotus Notes. The project was led by Brian Pink, a statistician rather than a technologist (though later Head of Technology Services from 1992 to 2000) and resulted in the establishment of a comprehensive infrastructure platform which has come to underpin just about all workflow, email, word processing, document and small scale database services, as well as providing a highly collaborative working environment.

'The significant and continuing growth of desktop computing that was taking place at that time was a major factor behind senior management's view that the most effective way to recover a corporate perspective on our information was to define an electronic information management strategy ... this corporate strategy has as its core technology, Lotus Notes.'

Brian Pink (Head of Technology Services 1992 – 2000) 'A Pandora's Box or The Light at the End of the Tunnel', paper presented at Playing for Keeps – conference on electronic records management, Australian Archives, November 1994, Canberra.

Over the next ten years considerable effort was put into development and implementation of Notes applications in both the statistical and administrative systems, to the extent that today over 1 000 separate applications have been designed in Notes, including the ABS web site.

'... With Lotus Notes our aim was always to create a working environment used by the whole organisation (not just a networked version of a set of personal productivity tools), where collaboration was supported and information created by anyone can be treated as a corporate asset.'

Jonathan Palmer, ABS KM Strategy – Overview Document, internal paper, 2002.

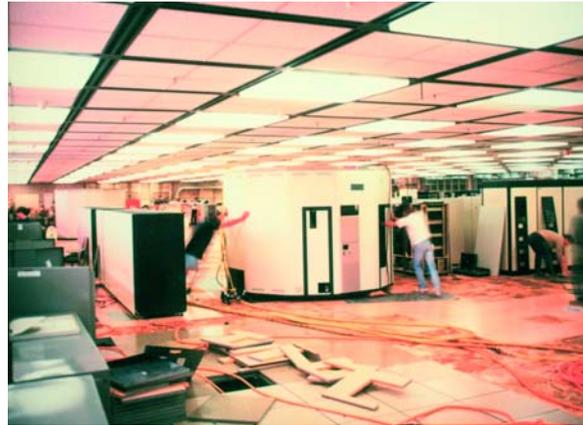
Delivering client focused services

Since the early 1990s two business areas, covering infrastructure and applications, have managed the installation, support and operation of the Bureau's computing equipment, communication networks and electronic storage media, and the development and support of software programs for application systems, including platform upgrades and databases. The Technology Applications area manages over 140 software systems and employs over 200 programmers. Under the Bureau's information technology (IT) cost recovery model introduced in the early 1990s these two businesses have charged for their services to clients and funded their operations from the charges. The cost recovery strategy has facilitated continued development of a client focused service culture through active account management and the placement of specialist IT support within client work areas.

As an internally sourced technology operation in the late 1990s the Bureau regularly benchmarked its services to ensure that it was providing value for money and the most effective service. Benchmarking surveys of IT services consistently showed that the Bureau was performing well against its peers and remained among the most cost effective organisations in the benchmark group. In distributed computing the total cost per user always registered below the level for peer organisations and indeed was usually one of the lowest costs. More recently, the technology area has started holding an annual technical event, ABSTech. This event promotes skills development and effective use of the Bureau IT and statistical environment. ABSTech has now become a catalyst for the development of sophisticated on-demand delivery services direct to the users' desktops.

Cost recovery of technology services

A major achievement of the Information Technology Steering Committee in the early 1990s was the introduction of a cost recovery system. Although initially introduced as a means of controlling demand, it also had the effect of handing back authority to the clients. Under the Bureau's cost-recovery mechanism, clients influence and contribute to the real costs of providing the infrastructure for the Bureau's technology environment and administering and supporting it. There is no doubt that cost recovery has led to a more efficient allocation of technology and provided a detailed level of understanding of the costs involved in providing technology services, which has served to extend the life of hardware. Cost recovery has also enabled the Bureau to continue to work within its budget appropriations, helping the organisation adjust the strategic balance between computer management, user management and corporate management as different technologies have evolved.



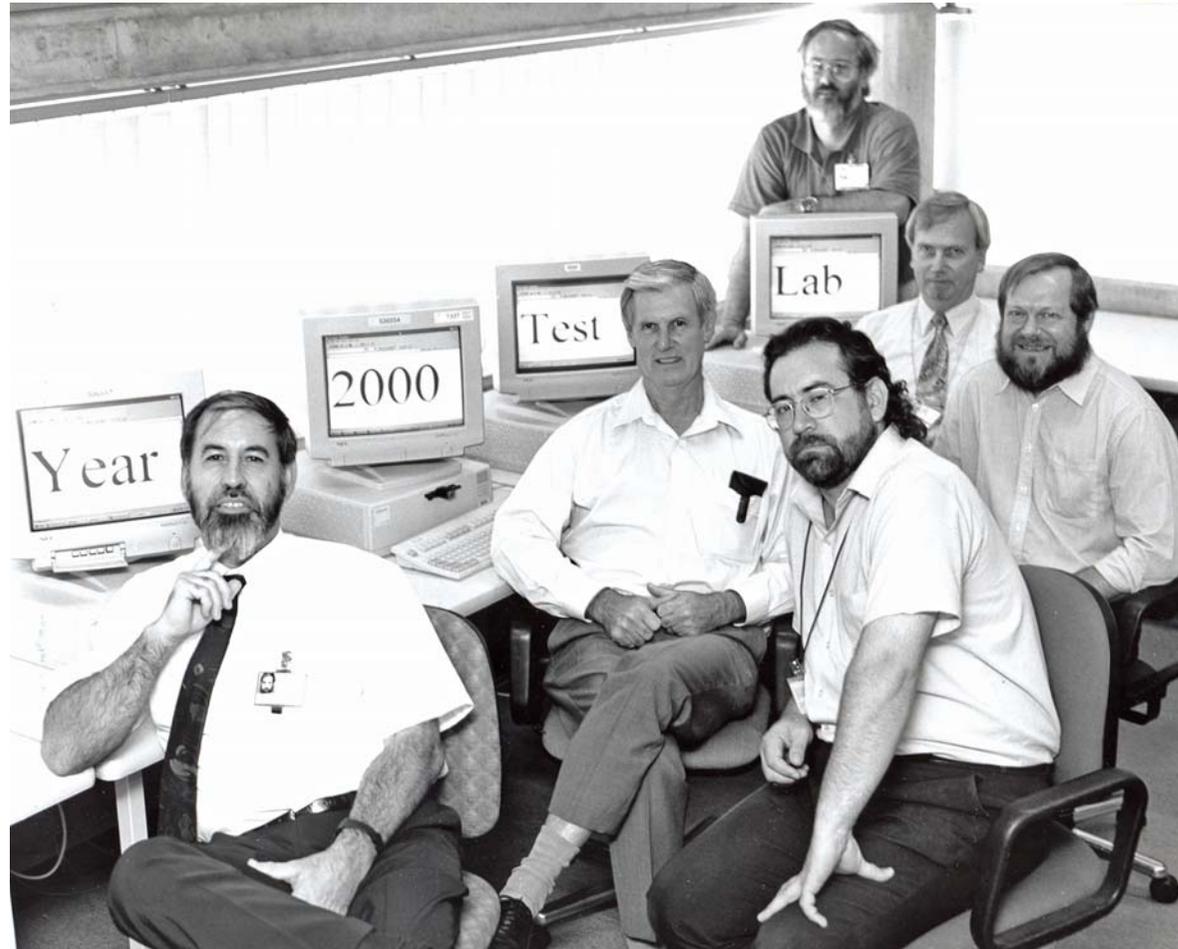
Moving the Storage Tek system with a hovercraft when the Cameron Office Computer Room was halved in size in the mid 1990s.

The focus on technology research

An important foundation contributing to the Bureau's leadership in computing has been its continuing focus on technology research and development. During the 1990s the agency formalised its research program, creating a small Technology Research area led by Bryan Fitzpatrick, a highly skilled technical specialist. The initiative has focused on developing an IT environment with facilities for improved Bureau performance in achieving its statistical goals. Its activities have included selection of software to improve integration among computing platforms; monitoring and improvement of security arrangements including advice on the establishment of the Bureau's firewall; and development of facilities to provide coherent access to ABS statistical data across collections. In the late 1990s extensive work was undertaken with the Information Management area to enhance quality control in the publishing and electronic dissemination processes. A major outcome of this was the development of a generalised production workbench to assemble publications using automated methods from data stored in the ABS information warehouse. Another major research project in the late 1990s was the specification and development of an ABS Corporate Directory to provide ready access for both staff and IT systems to information on structures, people, roles, and responsibilities. Lessons learnt from the Bureau's experience with Banyan about the power of well-managed directory services can be seen in the design of the ABS Corporate Directory infrastructure and the many applications built around it.

Year 2000

In 1996 the Bureau set up a Year 2000 test laboratory to ensure that all Bureau systems and the hundreds of vendor supplied products in the environment would correctly support operations in the transition through the year 2000. Looking back, the greatest risk faced during this time was with the dependence of a number of applications on the mainframe Data Dictionary that had been created in the first days of the FACOM. Fortunately, the risk was identified early and a programmer who had worked on the original specifications was able to update the programs so that the dependent applications ran faultlessly. The test lab strategy enabled the Bureau to have all business-critical computer systems signed off by mid 1999; it also provided an opportunity to cull hundreds of older applications. In the end Y2K passed without a ripple.



Part of the ABS Year 2000 team. Thanks to the team's work the year 2000 ticked over without a hitch for the Bureau.

Seated (L to R): Pat Armstrong, Bill McDonald, Dene Burton, Bert Blink, Geoff Coggins. Standing: Ross Geeves.

Security

The Bureau maintains a comprehensive security framework, and a strong confidentiality and security ethos has always permeated Bureau management and staff. In the mid 1990s, as part of the process of securing its data, the Bureau moved from identifiers (IDs) based on organisation structure to name-based IDs. It also introduced centralised registration, resulting in better control of security. In early 1997 the Bureau was the first Commonwealth agency to secure Defence Signals Directorate endorsement for its external gateway, which provides staff with access to Internet mail and the World Wide Web. As a result of its early efforts in Internet security the Bureau also provided help to a number of other agencies seeking to implement firewalls.

Joining the information super highway

In 1995 the Bureau joined the information 'super highway'. A web site was established which initially offered general information about the ABS and its services. At the same time an Internet based version of the AusStats time series service was made available to the staff and student users of most Australian university libraries. From its inception the ABS web site has been run on Notes/Domino architecture, enabling the organisation to use its extensive development experience with Notes to provide a timely, reliable and secure statistical dissemination service. In 2004 the site comprised nearly 200 000 web pages and received nearly five million visits. Notes content management and workflow features have been real strengths of the web infrastructure.

Data management in the 1990s

In the mid 1990s the Bureau turned once again to the issue of data management, seeking to improve and manage its systems infrastructure in a comprehensive and coordinated manner for storage, access and retrieval. The initial objective was to manage the Bureau's statistical output through a data warehouse which would support good data management practices through standard facilities, retain history and knowledge of collections and reduce costs in responding to the statistical needs of users. A review of this facility in the mid 1990s by Professor Bo Sundgren, a world expert in statistical data management, concluded at the time that 'the ABS system is now the world leader among data warehouses in statistical offices and organisations'.

The bulk of the Bureau's output data is now in the data warehouse and is linked to the required analytical, publishing and other output facilities. From this the Bureau can produce an authoritative corporate repository for publishable data, from which most data products will ultimately be generated. At the end of the 1990s Bureau publications were being produced through a series of publication assembly systems that incorporated automatically the latest design standards and drew their data from the warehouse. Since then, good progress has been made on a complementary implementation of input data warehousing facilities that will support control of data input processes and management of the relationship with respondents to surveys.



The people

The professional role of a 'Computer', the person responsible for tabulations, first appeared in the Bureau's staffing structure in 1911, but the real seeds of the Bureau's current professional IT staffing structure emerged following Digby Pridmore's visit to the USA in the late 1950s. In his annotated copy of the United States Employment Service's 'Occupations in Electronic Data-Processing Systems', we see definitions of the roles and skills required to provide the Bureau with a professional staffing structure.

Trained IT specialists were of course virtually non-existent in Australia in the early 1960s and could not be trained within the time frame required to meet the Bureau's ambitious computing plans. Consequently, the Bureau had to look and recruit elsewhere, and it looked to the United Kingdom. Extensive recruiting campaigns were conducted out of Australia House in London in the early 1960s. Relocation and travel expenses for the recruits and their families were covered and accommodation assistance provided on arrival. The recruits' professions were diverse, but nearly all included a background in mathematics. Professions included teaching, pure mathematics and aeronautical engineering, and there was even a musician. Most travelled to Australia by boat, which later earned the group the fond title of the 'boat people'.

'... I promised my wife when she agreed to marry me that I would try to get a job in Australia.'

Bill Egan interviewed in 2003.

To augment its new recruits the Bureau worked with two other agencies to further develop its in-house computer training program. This became the primary source of skilled staff for these agencies and many others for years

Information about the innovative environment in the ABS has sometimes been featured in technology magazines. ABSTech and Jonathan Palmer, the current head of computing in the ABS, were featured in CIO magazine in 2003.

Seven savour some electronic history



A little history was made in Canberra last month when the former heads of the ABS Computing Services Division and its predecessors gathered for the switching off of the ABS mainframe Cyber computer. The ceremony ended a 29-year association between ABS and Control Data which won its first supply contract in 1963. The men who guided the development of ABS computing since those early days are, from left, Digby Pridmore, Sam Burton, Alan Taylor, Alan Bagnall, Eddie Miller, Bill Egan and current First Assistant Statistician, Computer Services, Brian Pink. For the full story on the Cyber ceremony, turn to Page 7.

Highlighted in ABS News in early 1993 were seven of the nine men who had guided the development of the Bureau's computing since the early days. This photograph was taken at a function celebrating the retirement of the last Control Data mainframe (the Cyber) in December 1992. The two heads

of computing missing from the photo were Fred Bennett and Brendan Harper. Since 1992 there has been one further head of ABS computing, Jonathan Palmer.

DOES YOUR WORK LACK BYTE

The Bureau of Census and Statistics can offer you something to sink your teeth into

The Bureau of Census and Statistics operates one of the largest computer networks in Australia. The current network consists of 16 Control Data computers (one 3600, one 3500, four 3300x, six 3200s and four 160As). A major expansion utilising on-line techniques is under active investigation and the development of a communications network is being planned.

If you are seeking a challenging opportunity to participate in this planning and development or in the associated development of large-scale statistical data processing applications—we can provide the job satisfaction.

We are seeking:

Assistant Programmer

(Class 5) \$7,053-\$7,713

Programmer

(Class 6) \$7,939-\$8,525

Programmer

(Class 8) \$9,850-\$10,290

Higher salaries are currently under negotiation

Opportunities exist in software development, training and in developments in the sampling and econometric fields of applications.

Qualifications

Applicants should have completed appropriate training in programming and have had relevant practical experience. Tertiary qualifications should be stated.

Conditions of Service

- A contributory superannuation scheme
- Four weeks' annual leave
- Rental subsidy may be extended to married persons if recruited from interstate
- Long service leave entitlement
- Salary scales quoted were those operant on 1 June 1973

Applications to:

Recruitment Officer,
Bureau of Census and Statistics,
Box 17, P.O.,
CANBERRA, A.C.T. 2600.

Close: 28 September 1973.

A creative job advertisement seeking programmers to work with the Bureau in 1973.

to come. Programmer-in-Training or PIT courses, as they became known, were run from 1963 until the mid 1970s. The 1963 course was for people with prior programming experience, and from 1964 to 1971 for employees with an aptitude for computing work.

'... One of the first examples we were given of how to write programs in Fortran was a simple scoring algorithm for an Aussie Rules game, where it was explained that you clocked up six points if it was between the inner posts and one point if it was a behind for the outer, so it was a simple algorithm.'

Bill Egan interviewed in 2003.

The courses took a full year with two ten-week stints of on-the-job training. Exams at the end of the year included a major systems analysis and design exam for which a time was allowed of 'up to seven hours if required'.

'... The programmer-in-training course is a Board, a Public Service wide proposal. In fact back, I think in 1963, I was the Bureau representative on the selection panel set up by the Public Service Board to interview for programmers-in-training and over the six weeks period I think we interviewed something of the order of 400 people across all states.'

Alan Bagnall interviewed in 2001.

'PIT ponies', as the participants affectionately came to be known, wore their name and 'experience' with considerable pride as they worked hard and often in trying conditions. A Canberra Times article from late July 1969 records how trying conditions could be, with 54 of the 57 participants petitioning the Bureau to improve the heating in the training rooms. The day before, the temperatures in the training room had hovered at around

42 degrees Fahrenheit (5.6 degrees Celsius) when the day's lessons commenced.

By the early 1970s undergraduate computing was being offered at higher education institutions, and from 1972 the Bureau's training was conducted in conjunction with the Canberra College of Advanced Education, with an internal Bureau exam conducted at the end of the course. Staff studied full-time and spent their vacations working for the Bureau. During the mid 1970s the Bureau also introduced a Cadet Computer Systems Officer diploma scheme, again in conjunction with the Canberra College of Advanced Education.

The close environment of PIT courses nurtured a high level of camaraderie among PIT members. Most importantly, PIT furnished the Bureau with a set of loyal and highly skilled staff conversant with its statistical activities and computing environment. PIT graduates are still working in the Bureau today, and others, who sought job opportunities elsewhere when the Bureau's computing operations contracted in the late 1970s, went on to work in and lead the computing environments of other public service agencies.

The sheer amount of work involved in automating the Bureau's statistical and administrative systems signalled a need to involve end users in computing. In the early 1970s the development of some higher-level user languages saw statistical staff (that is, those not trained as professional programmers) undertaking programming work. These 'para-programmers' or 'subject matter coders' had an aptitude for this type of work given their statistical backgrounds, and in the 1970s and 1980s their contribution enabled the agency to deal with an enormous programming workload. The organisation further capitalised on this broadened



workforce in the 1970s by introducing the idea of multi-disciplinary project teams for its systems and development projects. In establishing these groups the agency demonstrated again its ability to be at the forefront of sophisticated computing.

Para-programmers played a notable role in redeveloping the Bureau's computer systems to operate in its FACOM environment in the late 1970s and early 1980s, ensuring that the Bureau achieved its very tight conversion timetable without compromising delivery of its statistical services. The downside of this, however, was the development of systems dependent on locals for patching and support and the diversion of statistical staff into programming duties rather than statistical analysis. At the end of the 1980s, as new computing opportunities were revealed, the future of 'subject matter coding' and 'para-programming' was a topic of considerable debate, which culminated in the agency taking the decision to actively reduce its reliance on 'para-programming', preferring staff to have a clear career path in either computing or statistics.

Since the mid 1970s the Bureau's primary recruitment method for programmers has been through annual graduate recruitment and the Bureau is an attractive employer for those with IT qualifications. In 2003 there were over 1 500 applications, with around 60 applicants interviewed and 14 employed.

Data entry staff using MAK technology for data input. Taken at Cameron Offices in the mid 1970s.

p.n.e 1960

1960

1965

1970

1975

1980

1985

1990

1995

2000

1921

Mechanical tabulators using Hollerith cards first used in census

1954

Census Trio's process 1954 Census.

1958

Digby Pridmore visits USA to study computing at US Bureau of the Census

1962

Bureau goes to tender for a computer system

1963

Contract for computers awarded to Control Data

1964

Arrival of computer professionals trained in England and first PIT course

1964

First mainframe CDC 3600 computer installed at cost of £2.25m

1965

CDC 3200 computers installed in Canberra, Sydney, Melbourne & Adelaide

1966

Census processed on computer for the first time with six fold increase in output

CDC 3300 & 160A computers installed in Sydney & Melbourne - CDC 3200 in Brisbane & Perth. Bureau computing centre largest in Australia

1967

Canberra computing centre relocated from Kingston to Treasury Building.

CDC 3200 installed in Hobart

1969

Table Generator released

Early 1970s

Work begins on developing integrated software - IESIS (Integrated Economic) & GSS (Generalised Software) systems

1971

CDC 3500 installed in Canberra

1972

Main computer installation relocated to Cameron Offices, Belconnen, ACT

PIT course transfers to Canberra CAE

1974

CYBER 72 purchased to support IESIS

MAK data entry equipment installed

1976

Work begins on re-equipment tender. Not completed till late 1978 on account of 'Computergate'

1977

Data Management Branch established - work begins on migration strategy to new environment and development of ABS Data Dictionary

Late 1970s

'Para-programmer' concept (statisticians who program) introduced

Early 1980s

New software introduced included PLEAT and SAS

1980

FACOM M200 mainframe and accompanying network and storage facilities introduced at cost of over \$16m

1983

First experiments with personal computers (PCs) Bureau begins retiring Control Data equipment

1984

Bureau standardises on Olivetti and NEC PCs

1985

Nixdorf data preparation equipment installed

1986

Convergent Technologies office automation system installed for Executive

First networks to connect PCs installed

1988

Data Preparation Branch closed - word processing operators deployed to other duties

Computer Information Centre Help Desk opened

Banyan network installed

1989

Cost recovery introduced for IT

Fujitsu M780 mainframe installed

First Unix computers introduced

ORACLE selected as RDBMS

1990

Adoption of explicit three tier (mainframe - mid-range - personal) computing strategy

ABS developed Rainbow personnel system released

1991

Census processed on M382 mainframe

Extension of cost-recovery to technology application work

First intranet (TACKBORD)

1992

Lotus Notes chosen as 'office automation' platform

Windows 3.1 desktop

Work commences on building the ABS Data Warehouse

1995

ABS web site launched

1996

Fujitsu GS8400/30 mainframe installed in 1996

Cameron Office computer room reduced in size by over 50%

1997

Upgrade to Windows 95 desktop

DSD accredited firewall implemented

2000

Y2K passes with barely a ripple

2001

First ABSTech event

2002

Move to ABS House in Canberra

2003

All production UNIX servers consolidated on to SUN Fire E6800 computer

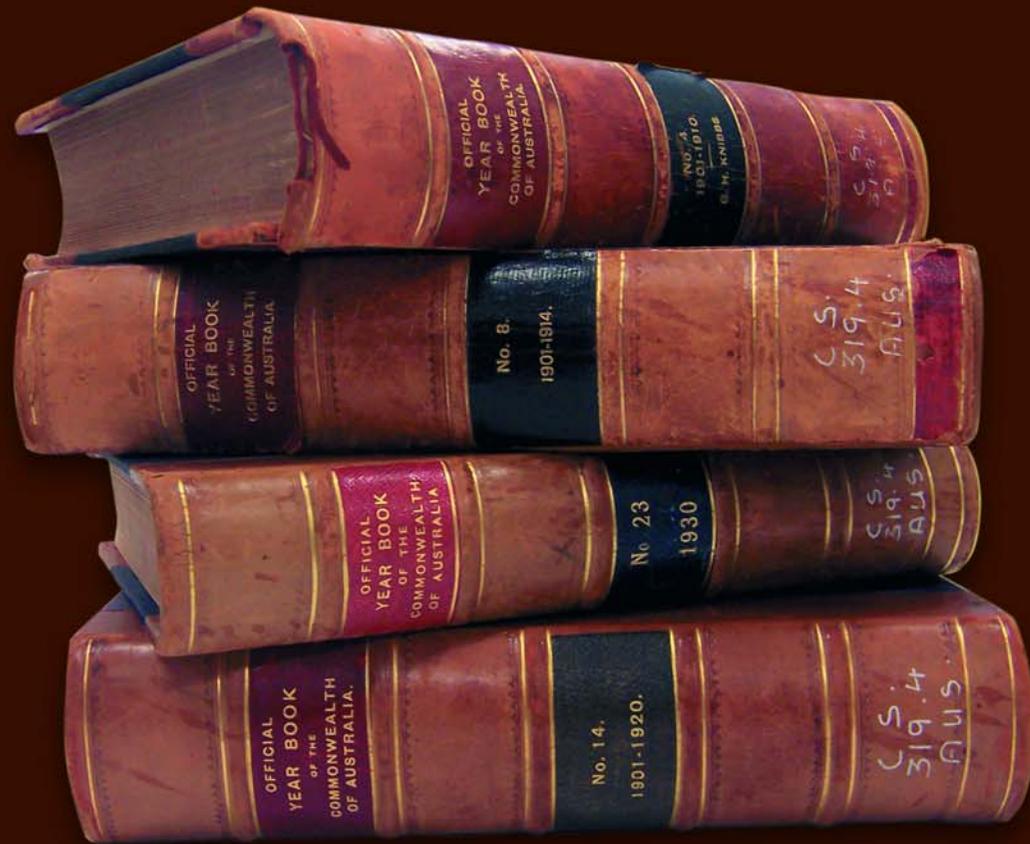
Upgrade to Windows XP desktop

2005

Process of migrating statistical collections off mainframe environment nears completion

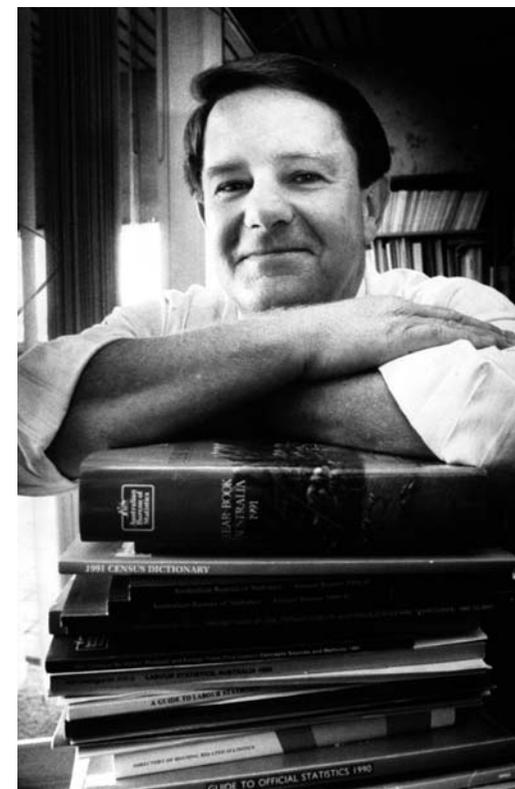
Right: *The Official Year Book of the Commonwealth of Australia* was the 'flagship' of the Bureau's releases under Knibbs and still holds that position today.

Far right: Bill McLennan, who was a key architect of the Bureau's dissemination strategies of the 1980s and 1990s.

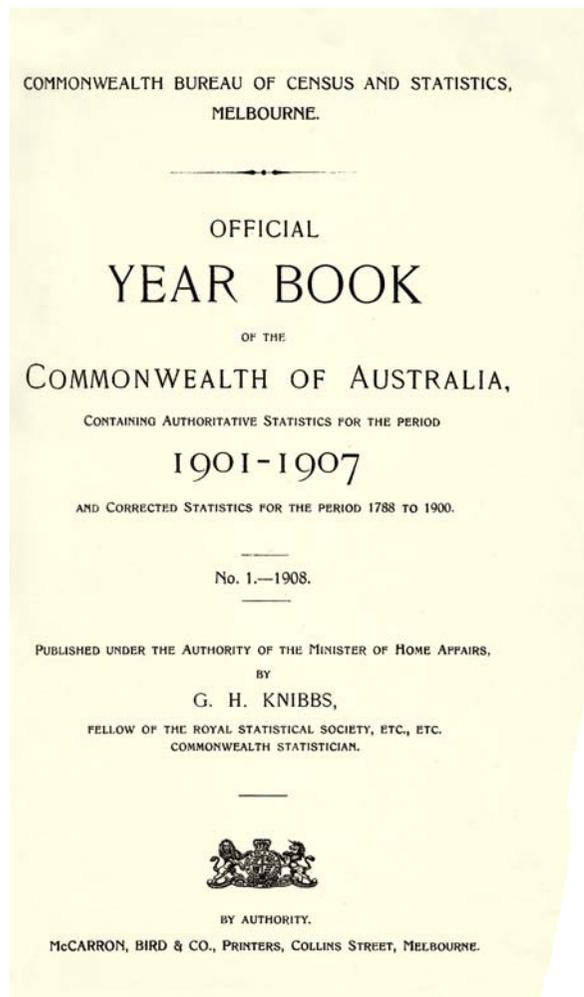


Helping Australians decide
CLIENTS AND DISSEMINATION

chapter nine



CHAPTER NINE



Front page, first *Official Year Book of the Commonwealth of Australia 1901–1907* published in 1908.

Reaching the people

From its beginnings the Bureau adopted the mantle, established by the colonial statistical offices, of providing independent, authoritative statistics. It compiled statistics and produced publications so that the public, as well as government, had access to those statistics. It placed great importance on and put much effort into ensuring that the statistics it produced were accurate and as timely as possible. It conducted censuses efficiently, supported by strong and coherent legislation. When sampling became practicable in the 1950s, sampling methods were applied and adapted rigorously to ensure as accurate an outcome as possible.

Throughout the Bureau's first 60 years, statisticians made decisions on statistical needs without a great deal of interaction with clients, though these decisions were based on a clear understanding of the issues that were most important to Australia. Since the 1960s, interaction with clients has increased substantially, and with it a growth in questioning of the justification for existing statistical activity.

Knibbs saw the importance of accurate, reliable statistics to a properly functioning democracy.

'The wise development of any territory demands that its affairs should be brought under systematic review ... it is universally recognised that an adequate statistic is essential to a critical review of a country's progress ...'

George Handley Knibbs, *The Evolution and Significance of the Census*, 1910.

In an address to the National Press Club in 1995, then Australian Statistician Bill McLennan made almost the same point, demonstrating that the Bureau's sense of purpose has remained strong through the decades.

'Reliable social and economic statistics are fundamental to ... open government [and] it is the responsibility of government to provide them and to maintain public confidence in them.'

Bill McLennan, 'Australian official statistics – aims, issues and prospects', Address to the National Press Club, July 1995.

In the early years the Bureau's place at the heart of Australia's society, democracy and administration was never questioned internally, and nothing occurred to shake that faith. It was seen as self-evident that the information needs of the Australian people were supplied by Australia's statistical agency.



Professor Sandra Harding and Dennis Trewin at the launch of the 2004 Year Book Australia at the National Museum of Australia.

A history of the Year Book

In relation to the first Year Book, Knibbs stated that:

'... its form has been decided upon after a comparative study of the annual statistical publications of the civilized world.'

George Handley Knibbs, memo to Secretary of the Department of Home Affairs 4 March 1908.

Its design was innovative for its time, and Knibbs received both national and international praise for the work. The first editor of the Year Book was John Stoneham, and he remained the editor until his retirement in 1934.

Over the years external factors sometimes affected the release and content of the Year Book. Throughout the first two decades each release of the Year Book occurred in the year of the edition. Even during the First World War the Year Book was only a few months late. But by the 1930s the impact of extra work resulting from the Great Depression caused the Year Book to fall about one year behind. For a couple of years in the mid 1930s the release of the Year Book caught up to the edition year but then fell behind again.

From the early years of World War II through to the 1950s Australia suffered a shortage of paper. This, along with censorship and changing priorities within the Bureau, impacted on the content and release of the Year Book during World War II.

'The provisions as to censorship preclude the publication of certain statistics during the war period. In the present volume Chapters V. "Transport and Communication" and XXIV. "Trade" are chiefly affected. The "Defence" Chapter has been omitted but the data will be made available in a future issue.'

Stanley Carver, in Preface to *Official Year Book of the Commonwealth of Australia*, No.33, 1940, 18th June, 1941.

In the 1941 Year Book (released in 1942) the chapter on 'Mineral Industry' was also affected by censorship.

By the middle of the war paper was difficult to obtain so no Year Book came out for 1942 and instead the next Year Book covered the period 1942–43. This also occurred for 1944 and the 1944–45 Year Book was not released until 1947. By then the war was over and the omitted statistics from the earlier volumes (including the entire 'Defence' chapter) were reinserted in the Year Book for 1944–45.

However 'printing difficulties' continued, as it appears that the ongoing paper shortage had actually put some printers out of business. The years 1946 and 1947 were combined and Wilson did not sign the preface until 1949. In an attempt to catch up, the years 1948 to 1950 were skipped entirely and the 1951 Year Book was actually issued in 1951. The printing difficulties continued through to the mid 1950s.

In the mid 1970s, years were again combined and in 1974 the Year Book was produced with a soft cover for the first time. The 1987 edition of the Year Book was not published but the cries of protest ensured that it was back the following year. In 1994 it was decided to establish a practice of bringing the Year Book out in advance of the year of its title. This meant that it was necessary to forego the 1993 edition of the Year Book.

Throughout its history the Year Book has always published a cross-section of information beyond the statistics that the Bureau produces itself. It has regularly included information on government, defence, geography and climate. As well as the regularly published information, the Year Book has always included articles on a wide range of topics.

'... for almost 100 years now, Year Books have recorded a changing Australia. They have recorded many aspects of our population, our economy and our way of life. In doing that the Year Books have created a unique and powerful record of the way the Australian nation has progressed, milestone by milestone.'

Professor Sandra Harding (Chairperson of ASAC), 'Address to launch Year Book 2004', 27 February 2004.

Early publishing

One of the first publications of the newly formed Bureau was the *Official Year Book of the Commonwealth of Australia*, published in 1908 covering the period 1901–1907. This publication consisted of a range of statistics and explanatory essays aimed at the general public, and built on the example set by Coghlan in his series *A Statistical Account of the Seven Colonies of Australasia*, which had run from 1890 to 1902–03.

'In addition to Statistics for the whole of the Federal Period, 1901 to 1907, this Year Book also furnishes corrected statistics for the period 1788 to 1900. This was necessary to constitute this publication as the authoritative source of statistical information for the Commonwealth of Australia for the whole Federal period, and to show the proper relation of that information to the past statistical history of Australia.'

Commonwealth Bureau of Census and Statistics, *Official Year Book of the Commonwealth of Australia 1901–1907*, No.1, 1908.

Knibbs left no doubt as to his intention for the role of the Year Book. It was generally well received, with his Minister Hugh Mahon describing it as 'a triumph of industry, discrimination and judicious arrangement'. (Forster and Hazlehurst, 1988)

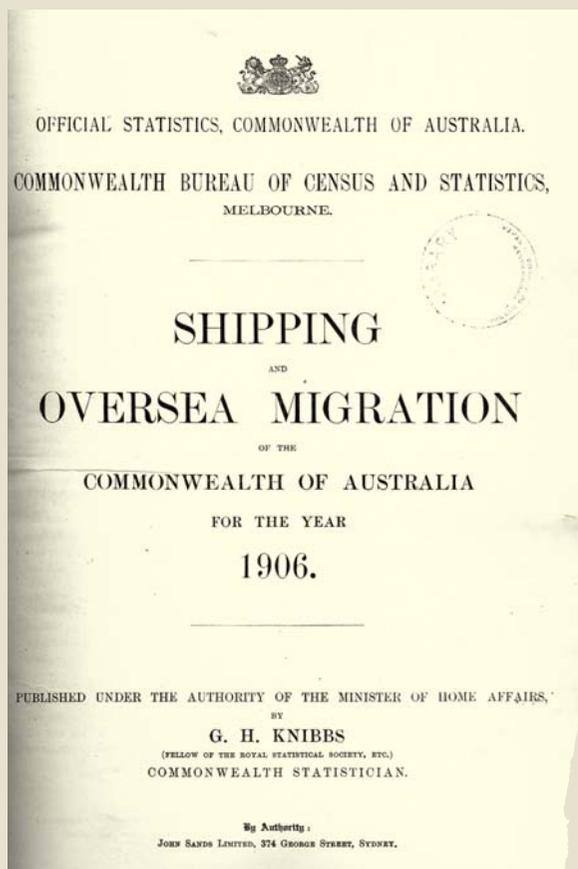
Early users of the Bureau's data

Aside from the broader public, the Bureau had small numbers of key government clients in its early years, mainly the Treasury. It was also privy to the needs of individual states through the Conference of Statisticians, although state statistics were largely provided through the state statistical bureaus. The level of interaction between the Bureau and its user community is difficult to establish, as surviving records of the fledgling Bureau tend to refer to its publications rather than internal government correspondence.

In its very early years, the Bureau primarily focused on the provision of material in publications. In this period, new statistics generally made their first appearance in the *Commonwealth Monthly Summary* and from about 1918 onwards in the *Quarterly Summary of Australian Statistics*. Publications included the broad ranging approach of the Year Books and Summaries as well as bulletins of a more industry specific nature. The Year Book and its ilk were aimed at the public at large. The bulletins tended to have a more specific group of users.



Prior to integration, each state bureau released its own set of publications. The *Statesman's Pocket Year Book of South Australia* was released each year from 1917 until a change of name in the 1960s.



The Bureau's first publications

The Bureau produced statistics publications very soon after its establishment. Knibbs was appointed in June 1906 and his small contingent of staff were appointed between October and December 1906. Yet within two years they had produced at least ten publications.

Finance, Bulletin No. 1, 1901–1907.

Population and Vital Statistics, Bulletin No. 1, 'Population', 1901–1906.

Population and Vital Statistics, Bulletin No. 2, 'Commonwealth Demography', 1901–1906.

Population and Vital Statistics, Bulletins Nos 3–5, issued quarterly, commencing quarter ended 31 March 1907.

Production, Bulletin No. 1, 1901–1906.

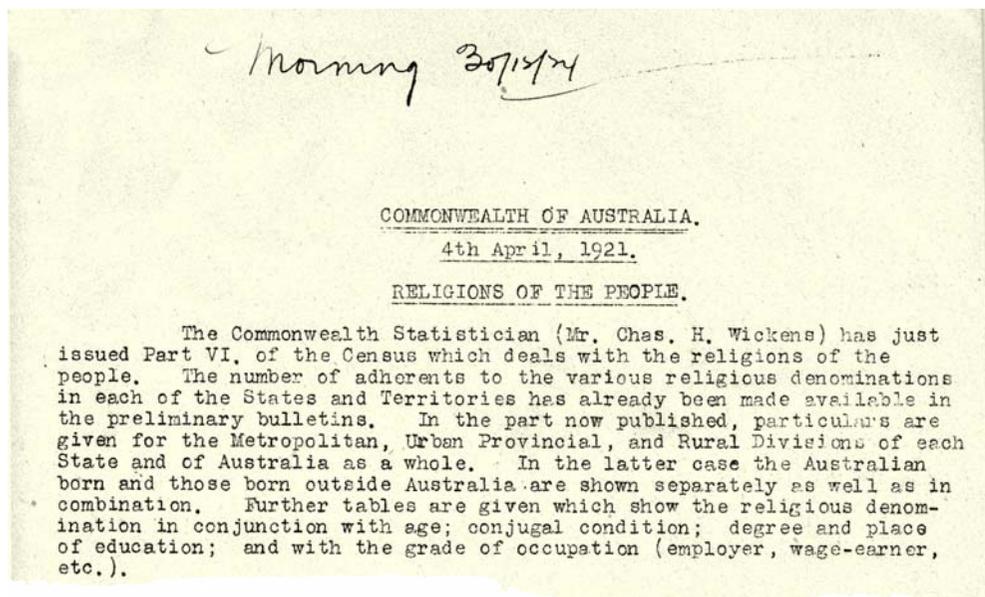
Shipping and Oversea Migration of the Commonwealth of Australia, 1906.

Trade, Customs, and Excise Revenue for 1906, Parts I and II, 1906.

Trade, Shipping, and Overseas Migration, Bulletins Nos 1–13, issued monthly, commencing January 1907.

Transport and Communication, Bulletin No. 1, 1901–1906.

Official Year Book of the Commonwealth of Australia, 1901–1907, No. 1, 1908.



Above: A press notice from the 1921 census released 30 December 1924.

Press notices were also important. Even then, newspapers were seen as a useful means of informing the public. Evidence can be found of press notices issued by the Bureau as early as the early 1920s. However, the attitude to media embargos was somewhat different to today.

In a letter of 1925, Wickens wrote to Giblin:

'In regard to information and comment for the press, I shall be glad if you will give any such as coming from the "Deputy Statistician", using your own discretion as to the nature and extent of each which it is desirable to give. My usual practice has been to let the press have results likely to be of interest as soon as they are available without waiting for the issue of an official publication.'

Letter from Charles Wickens to LF Giblin, "Transfer of Tasmanian Bureau", 27 January, 1925.

While it can be established that broad policy issues influenced the statistics to be collected, there was a large degree of 'produce and publish' associated with the output of the early Bureau, with successive Commonwealth Statisticians determining the statistical developments that would provide the best response to Australia's needs.

Two key series introduced early in the Bureau's history show that it made essentially internal decisions regarding collections. The retail price index, established by Knibbs in 1912 (discussed in more detail in chapter 4) was based on Knibbs' personal belief that the good of Australia as a whole would be best served by Australian courts and policy makers having access to a well thought out and consistently applied measure of price change. The balance of payments, established in the 1932 Year Book by Wilson at the behest of Giblin, was based on earlier work that Wilson had produced at university for his doctoral thesis. Giblin can be regarded as both a producer

of statistics and a client, having been both statistician/economic adviser and academic economist/mathematician.

The number of publications produced by the Bureau increased gradually throughout the first 75 years. A list of Bureau publications was included in each Year Book up to 1974, when the Bureau produced its first comprehensive annual catalogue of publications. The only interruption to this pattern was a temporary decrease in frequency of a number of publications brought about by the paper shortages during World War II and in the immediate post war period. Over the years, the use of graphs, commentary, analysis and statistical tables evolved, aimed at ensuring that the main findings were widely understood.

Post-war developments

During World War II and in the post war period, there was a policy driven increase in the demand for statistics in areas not traditionally covered, notwithstanding the difficulties in producing publications during the war. Many factors fed into this growing demand, not least the importance of full employment combined with the hope, held out by Keynesian economists, that the economy could be manipulated to achieve this. Various Commonwealth agencies were involved in implementing economic policies related to their portfolios, and statistics were necessary to regulate policies and monitor performance.

'Oh yes. We all – when I say we all, I'm talking mainly about the members of the Economic and Financial Committee, who were mainly departmental (there were some outsiders) – we were using statistics for planning purposes very substantially and very avidly, so we were interested in what was being thrown up by the statistical machine for that reason.'

Sir Roland Wilson interviewed in 1984.

From the 1950s the increasing use of surveys meant that the Bureau could more easily satisfy these data requests, with the result that its profile was raised, at least within the Commonwealth arena. Meanwhile within the states the demand for statistics, particularly economic statistics, had temporarily languished. For the purpose of tight wartime control, the Commonwealth government had taken control of national economic management in 1942, leaving to the states only the maintenance of essential services. This reduction in state demands for statistics continued for some time into the post-war era, as the relationship between the levels of government had been

changed fundamentally by the Commonwealth takeover of income taxation.

'State governments' increasing needs for statistics ... only began to emerge when those shortages, which had long persisted, were at last being made good. At that time it once more became possible to over-supply government services and to provide facilities, the value of which could be open to question.'

Ken Foreman, 'State Governments' Statistical Requirements - Historical Perspective', circa 1983.

In the late 1950s the various integration agreements negotiated with the state statistical bureaus saw them merged into the Commonwealth Bureau of Census and Statistics. As part of the integration, the Commonwealth took responsibility for statistical functions on behalf of the state governments as well as the Commonwealth government. This marked the beginning of the centralisation of statistical functions in Australia, although the process at first moved very slowly.

Increasing demands for statistics were eventually met by the increased availability of sample surveys and the advent of modern electronic data processing. One particularly important survey development was the emergence of the first household surveys in the 1960s. Initially focusing on labour force surveys, they quickly acquired supplementary questions. This supplementary information could be collected at a relatively low marginal cost as interviewers were already visiting households to ask the questions pertaining to the labour force. It was now possible to gather statistics, at relatively short notice, on a wide range of topics where previously the only vehicle for gathering such information had been the population census.

The 1970s were an important decade in client relations, during which the old order began to change. Though the

Bureau continued to produce output in the manner its users had come to expect, it also embarked on a period of evaluation and questioning of existing statistical activity, and of the organisation of dissemination activities. The motivation stemmed from a perceived need within the Bureau to justify all its activities. The planning done would lead to great change down the track. A number of events in the 1970s fed into this changed position. It was also the beginning of the provision of information through media other than printed publications. The new ways of dispensing information included special tables and detailed tables on microfiche.

Outposted officers

The role of an outposted officer is primarily to promote better use of Bureau statistics, improve the relevance, quality and cost-effectiveness of existing statistics, coordinate the statistical activities of government agencies, improve the use of departmental by-product data, and generally strengthen Bureau relationships with key clients.

Bureau officers were placed within government departments during World War II.

'Yes, Stan [Carver] introduced "seconding" – a device of seconding a statistical bureau officer into other departments to try and knock their statistics into better shape for central purposes. So there were quite a number of them scattered around the departments during the war. It was mainly a matter of providing people and persuading the departmental heads to take in somebody like that, to help with their statistical tasks.'

Sir Roland Wilson interviewed in 1984.

This appears to have been Carver's response to the more exacting statistical requests coming out of new departments such as the Department of Labour and National Service, set up during the war and headed by Roland Wilson, himself on 'secondment' from his role as the Commonwealth Statistician. Some Bureau notables were outposted.

'Although his whole working life was with the Bureau, [future Commonwealth Statistician, Jack O'Neill] spent periods during

the war years outposted as a statistical officer with the Bureau of Meteorology in Melbourne and the Food Control Unit of the Department of Commerce and Agriculture.'

Dennis Trewin, 'Obituary: Jack O'Neill', ABS News, 1998.

There is evidence of outpostings throughout the 1950s, though the extent of the policy is now difficult to measure. Henry Speagle, Victorian Year Book editor for 20 years, was initially inspired to leave the Department of the Navy and join the Bureau, by the Bureau's outposted officer Noel Dunstan.

The concept was still used in the mid 1960s, with a view to improving the use of ABS data and providing better-targeted statistics in a more usable form.

'The other thing that put some pressure onto the ABS was ... the Public Service Board ... They asked us would we be prepared to outpost an officer to them, to undertake statistical work. Most departments were getting more and more interested in the use of information and most of that information was going to be in a statistical sense. Having thought about it we agreed this was a good idea. We wanted to keep the Public Service Board on side anyway because they approved reorganisations. We outposted an officer there. That started me, I think, and my bosses, thinking that other departments could well use outposted officers to their advantage and ours. So we started a system of outposted officers which, I think, still exists and which has proved beneficial to the Service generally.'

Fred Bagley interviewed in 2000.

The role of an outposted officer involves balancing the competing and sometimes conflicting needs and wishes of the host department and the Bureau, while trying to give due weight to statistical integrity and the survey methodology.

'John Miller gave me tremendous support as an outposted officer in Immigration. The Department wanted to do a longitudinal survey of migrants and we felt that our expertise didn't cover the sort of mail-out longitudinal survey that they envisaged and I was between two camps ... Our Minister for Immigration was adamant we should [produce a longitudinal survey] and just as I was appointed as the outposted bloke to Immigration ... this announcement was made. It was pretty heavy going for me, but fortunately John Miller gave me such monumental support [that] I was protected from a lot of the flak that was floating around.'

Frank Colwell interviewed in 2000.

The birth of marketing and public relations

Frank Sayer, Deputy Commonwealth Statistician for Western Australia and Queensland as well as the head of the Victorian Commonwealth office prior to integration, took a particular interest in promoting the use of statistics in the community through the media as well as through organised talks and seminars for government and business organisations. He was a founding member of the Market Research Society of Victoria in the 1950s.

Under his influence, and with the full support and encouragement of the Commonwealth Statisticians Keith Archer and Jack O'Neill, the Bureau began to develop a more sophisticated understanding of using the media to inform the public, an example of which is the 1968 article in *The Australian* newspaper 'Why we are integrating the Economic Censuses' which was written as a press release and published largely verbatim.

Media and public relations have complementary roles in relation to the Bureau and its function. The media are a significant facet in the 'public good' component of the ABS mission to disseminate to the wider community, through the news media in particular. The establishment of the public relations unit towards the end of the 1970s recognised the importance of the media as a means of informing the community. The unit also performs the public relations functions aimed at improving the image of the Bureau.

A Crisp new beginning

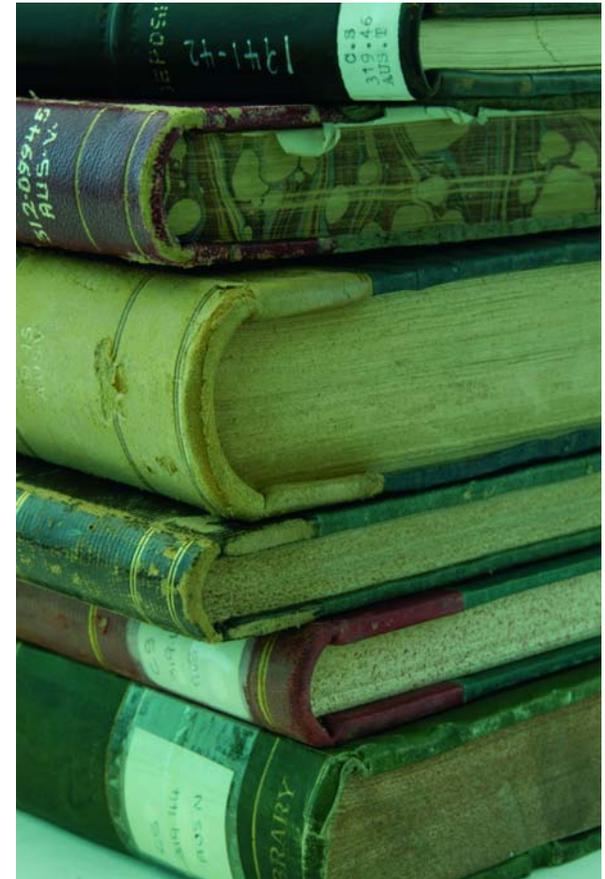
The Crisp Report of 1974 identified deficiencies in official data systems. Among these were a number that related to the level of communication between users and producers of statistics.

Not surprisingly, the Crisp Report helped stimulate greater interest in the users of statistics. In the following years, much work was devoted to identifying users, and potential users, understanding their requirements and attempting to supply them with what they wanted.

In 1975, Ken Foreman and Alan Taylor produced a report to the Commonwealth Statistician titled 'Integrated Statistical Data Base Systems'. The report stressed the importance for the Bureau to quickly obtain database technology and become proficient in its use, in order to fulfil its obligations as central statistical agency over government statistics as a whole.

'... it will be necessary to achieve early and evident success with statistical data base development, if only to forestall the creation of rival statistical data base systems in at least some influential Departments. Otherwise the Bureau's influence as a central statistical office over the Government's statistical work as a whole would be seriously prejudiced to the detriment of the country's statistical services generally and thus to its good government. For these several reasons, the establishment of an integrated statistical data base system ought, we believe, to be accorded the Bureau's earliest, most forceful and effective support.'

AA Taylor and EK Foreman, 'Integrated Statistical Data Base Systems', 1975.



The Crisp recommendations

'There are no effective procedures for communication between producers and users of official statistics. While the 'outposting' system provides a channel for communication between the Bureau and some departments, communications between producers and users of official statistics in general, and between users with common interests, are inadequate.

'Inadequate channels for communication between the producers of official statistics and both official and private users result in:

- Gaps and deficiencies in official statistics
- Emerging needs not being identified quickly enough to permit timely response
- Changes to statistical series (which seriously inconvenience users) being made without prior consultation.
- Users are not always able to obtain access to data in a form suitable to their particular needs because of unnecessarily and unrealistically severe secrecy restrictions and because data-systems are often too inflexible.'

Committee on Integration of Data Systems, Report, April 1974.

Clearly the implementation of these recommendations had the potential to greatly improve the way in which user requests were fulfilled, but it would be many years before the vision was implemented.

Several of the key recommendations of the Crisp Report were realised with the passing of the Australian Bureau of Statistics Act in 1975. This established the Australian Statistics Advisory Council (ASAC). Its role was and remains to advise the Minister and the Australian Statistician in relation to the provision of statistical services in Australia, and it has been active in setting the direction and priorities of the Bureau's work. Creation of ASAC meant that for the first time the Bureau had an objective, independent body (including major clients

of the Bureau) to oversee, advise and support its work program, and the work program had consequently to be framed with this external review function in mind.

From the 1970s, periodic large-scale household surveys were introduced on a range of topics. All of this made the Bureau much more able to respond to emerging requirements for social statistics. One consequence was that communication was opened up with previously unrecognised users of statistics.

As well, the nature and purpose of the Conferences of Statisticians changed under the new regime, and representatives of state governments started to be invited. Before integration, these conferences had been used to discuss national statistical issues, particularly those

of interest to state governments. Following integration they were used, not always successfully, to coordinate the activities of the central and state offices of the Bureau. Under Roy Cameron's influence they reverted to their pre-integration role. Management Meetings, involving the senior managements of the state offices and the central office, were now used to address the Bureau's planning and strategic activities. This was a decisive formal step in the centralisation of management of the Bureau, although informal steps in that direction had been increasing over time.

Letting the outside in

The need for improved mechanisms for user consultation was highlighted by the furor surrounding the 1976 population census. Some problems with publicity for the 1971 census had prompted the Bureau to arrange for a public relations study to be undertaken prior to the 1976 census. However the \$1 million campaign recommended by the study had not been accepted as appropriate. Meanwhile, the user consultation process had identified a demand for greater data to be available from the census. So the 1976 census went ahead with very little publicity and with an increased number of questions. When these new questions came under fire from some vocal members of the media and even members of parliament, the clients who had requested the increased data failed to provide any public support. The result was a public relations nightmare. Nevertheless the lessons were being learnt, and the Bureau was broadening and formalising its communication with the community.

About this time the Bureau began to establish user groups specific to its subject matter areas. These became invaluable in helping the Bureau to ensure the relevance and quality of its statistical output. Today a more extensive array of advisory groups is associated with specific subject areas. Their role is to advise on the appropriateness and effectiveness of Bureau strategies in their area. They comprise a cross-section of major clients in the relevant fields.

However, while the Bureau was starting to develop an understanding of the users of its statistics, the users were beginning to experience a degree of frustration at the lack of client focus within the Bureau.

I think ... that most of our people in the organisation were more concerned about collecting data, designing forms and processing data and once that process was finished there was very little resource left over to produce statistics and to disseminate statistics. In fact, almost the most unimportant aspect would have been the production of publications at the end of the cycle, because we were then into the next collection cycle and the new form ... Once the systems became efficient, people stopped worrying about collecting and processing, and started talking about user needs.'

Alan Bagnall interviewed in 1999.

Bureau clients were becoming more sophisticated, more detailed and more specific in their statistical requirements, and this led them to be dissatisfied with the Bureau's responsiveness to some of their needs. In this period, under the leadership of Roy Cameron, the Australian Statistician, internal changes were made to the Bureau, including some centralisation of dissemination and client servicing activities. Computerised mailing lists were compiled, allowing clients to be more easily identified and categorised.

To that extent I think it is a real problem that people were not interested in producing statistics. Late in my career when I was Deputy, my secretary ... would come to me and say, "Look Mr Bagnall, the telephonist is on the phone; she's got a problem. She's had a phone call and she's now directed to six different people in the Bureau and the phone call keeps coming back. Would you mind taking the call?" "Certainly". It was a person looking for statistics. So I took the initiative, chased him up and got somebody to ring back with the answer. I found then that

the number of calls being referred to me increased, and when I approached the telephonist[s] ... they said, "You are virtually the only person in the organisation, if we put a phone call [to] requesting statistics we never get that phone call back". That was the seed of my thoughts for the information services concept and getting around to doing that.'

Alan Bagnall interviewed in 1999.

By the late 1970s, although newspapers had always been an important component in the dissemination armoury, the quality of publications had improved to the point where statistics began to be regularly reported in the newspapers. Media awareness of at least the more important statistics became far more noticeable. Around this time, the concept of press notices was split into two categories and preliminary publications were born. Press releases were used to inform the media on specific issues, and were written with the aim of encouraging the media to simply copy the content for reporting purposes. Preliminary publications were used as the first release of regular statistics. Main features were developed with a primary goal of assisting media reporting of official statistics.

Having taken the first steps in the direction of a more market oriented approach, a working group was established to review the dissemination of Bureau information. It found that many statistical areas did not focus on how clients might be using those statistics, and what form and format might be most useful for those clients. Instead, these statistical areas put their energy into collecting and producing the statistics, and saw that as the sum total of their task. Added to this, in the central office there was a widely held perception that the client was solely the Commonwealth government.

Within the state offices there was greater awareness of the broader user base, but they were not always successful in communicating these needs to the central office.

The review recommended a number of strategies designed to change the way the Bureau responded to user enquiries. In particular, it was recognised that statistics needed to be delivered to specific clients in a form most useable by them. As the computing capacity of users increased, demand was increasing for alternative forms of delivery such as magnetic tape and microfiche.

The review found that major users were satisfied with Bureau statistics and services, but less sophisticated users were unaware of how to access the Bureau, and in particular it concluded that the Bureau needed to place more emphasis on state oriented needs, to pre-empt moves by these users to seek alternative sources of statistics. It also recommended that greater attention be given to the coordination role specified in the Census and Statistics Act. One of the outcomes was to upgrade the relative importance of the Bureau's activities around clients and dissemination. A new branch, known as User Services Branch, was created in 1978 for this purpose.

We know what's good for you

'[The] ABS, at least 15–20 years ago, almost had a philosophy [that] the more statistics you produced the better. At 11.30 am each day we would throw open the doors, push out all our information and slam the door quickly in case the user was coming by. The next day we did exactly the same thing and if there was twice as much to go out, well, we had done a better job that day ... When we lifted the doors up, you could look out and there would be no statistics there, so obviously they had gone. But we never worried ourselves as to whether the users had come along and taken them, and were using them or whether, at the end of the day, the cleaners had come along and put them in a big dump truck and taken them away!'

Tim Skinner interviewed in 2002.



Journalists, stockbrokers and traders, among others, became increasingly eager to get the Bureau's latest information as soon as it was released. For many years, the Bureau has released information on the dot of 11.30 am EST (8.30 am in Western Australia). When paper releases were the norm, this culminated in the 1980s and 1990s in a somewhat undignified scramble for publications with mobile phones at the ready. However the advent of the Internet has relegated the mad scramble to history. Publications are still released at 11.30 am, but clients can access the information wherever they access the Internet.

The period of the absolute reign of paper was coming to a close and the technology-driven information age was approaching. Bureau management of the time needed to be farsighted enough to sense this shift in the environment in which the Bureau operated, so that changes could be made to keep abreast of the shift, using the technology available at the time. There followed a series of major electronic initiatives in the early to mid 1980s.

Through the 1980s the ideas generated by the dissemination review started to be implemented. A greater focus on clients was evolving. An understanding emerged of two distinct facets of client satisfaction:

providing the statistics that the client really requires; and providing them in the formats the client finds most useful. User groups became increasingly important as a source of advice to the Bureau regarding the statistical needs of the broader community of potential clients, both private and public.

These internal moves were bolstered by a general emphasis across the Australian public service on identifying clients and focusing on client needs. Bureau subject matter staff were increasingly communicating directly with Commonwealth and state public sector clients, and played an important role in maintaining

communication and ensuring that the needs of these clients were being met.

In the early 1980s the Bureau was also the subject of a significant joint management review, conducted by Touche Ross in collaboration with the Bureau and the Public Service Board. This review clarified the responsibilities of the Bureau to state governments and the sharing of these responsibilities between the central office and the state offices. Among other things, it led to the establishment of the Statistical Support and User Liaison units in state offices.

The Statistical Support and User Liaison Service

In 1985 the Bureau set up the Statistical Support and User Liaison Service. This was designed primarily to provide a flexible and responsive service to meet the priority statistical needs of state and territory governments in addition to those met by the ongoing statistical output of the Bureau. This work still generally takes the form of statistical consultation or provision of an outposted Bureau officer within a state or territory government agency to carry out a specific short-term statistical assignment.

Through this service the Bureau participates in bodies established by state or territory governments to

coordinate their statistical activities and requirements. The service also maintains bilateral contact with these government departments and agencies to be aware of their needs for statistics, their statistical activities and their use of information from existing collections, and to encourage the adoption of uniform statistical standards and practices.

The Statistical Support and User Liaison Service is closely involved in the development and conduct of annual state-specific Bureau household surveys, for which the topics vary from state to state. In some offices the service also undertakes special analyses

of Bureau data and produces publications, typically using data from ABS household-based surveys and presenting results for sub-state regions.

The service also coordinates and undertakes visits to major users of statistics, and conducts seminars for a broad range of clients in the public and private sectors, including tertiary institutions.

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One of the early advertisements developed to sell CData 86.

Early moves into electronic dissemination

In the early 1980s the Bureau introduced the INFOS time series system. It provided for the storage, retrieval and manipulation of time series, and included simple tabulation and graphic facilities. The system was difficult to use, but it signified a shift in approach towards providing value added electronic services.

The Bureau released its first confidentialised unit record file in 1985. This comprised details taken from the health survey, but confidentialised to prevent identification of individuals on the file.

In 1986 the Bureau began to provide information on VIATEL, the national videotext service. The information included current statistics, indexes, service information, release dates and a messaging service providing for electronic inquiries.

After negotiations with the CSIRO, the Bureau in 1986 released AusStats on the CSIRONET network. AusStats was in fact INFOS, but now made available Australia-wide through this network. In 1986 TELESTATS was released to provide email delivery of foreign trade statistics.

The 1986 census was the first to provide statistics on CD-ROM, in a product known as C DATA. This was developed in collaboration with a small, innovative

software company Space Time Research Pty Ltd. The software was largely developed by its chief executive, Dr Jack Massey, a geographer who saw the early potential of CD-ROM technology following visits to the United States.

The decision to release on this new medium was in response to difficulties experienced by many clients in using magnetic tape files. It also allowed the Bureau to provide a mapping capability in conjunction with the census. The release of this product marked a major shift in the Bureau's technological and marketing sophistication. Indeed CD-ROM technology was so new that the Bureau found it necessary to also work with suppliers of CD-ROM readers to enhance sales of the product. Sales of C DATA far exceeded expectations.

Information consultancy – data available on request

Bureau publications for many years have contained details of contact officers for the particular subject area involved, for use by clients who require further information or help. In the past, these contact details were provided to ensure that production and supply of any further statistics from a collection were the responsibility of the area producing the publications from that collection.

This approach had two problems. First, there were inconsistencies between areas in the expertise with which they responded to such requests, largely depending on the knowledge or commitment of the designated contact officer. Second, where clients had queries that cut across two or more collections, they had to negotiate separately with each subject matter area, with no guidance as to the overall picture and often varying levels of help from one area to the next.

As part of the new approach to looking after users, two services were set up:

- The Telephone Information Service (TIS).
With one TIS in each state office, the idea was to provide a more professional interface with clients, using an officer with understanding of the collections to liaise with them, understand the issues they faced and the purposes for which they needed the information, work out which statistics they would require and produce a package of information tailored to the individual clients' needs.

- The Central Information Service (CIS). Located in central office and some state offices, this was designed to perform a function similar to the TIS, but also to coordinate the assembly of information between TIS units and between subject matter areas.

This led into Information Consultancy – a national centralised area, represented in each office, servicing requests for data from the major Bureau databases, particularly population census, foreign trade and more recently labour force. Its focus is bringing together previously unpublished data into a package specifically designed to suit a client's needs.

Time to get focused

By the mid 1980s, although a number of electronic services had been implemented, they had largely been ad hoc and experimental. An organised and systematic approach was now needed. The Bureau's first Corporate Plan, released in 1987, clearly and for the first time explained the goals and vision of the Bureau, and placed significant emphasis on dissemination and output arrangements. It highlighted the need to use an appropriate mix of dissemination media and the importance of content and presentation, including the use of tabular and graphical features and greater use of electronic means of dissemination. The main architect of this first plan was Bill McLennan.

Around the same time, a Commonwealth Budget decision of 1987 led to a major change in the Bureau's approach to dissemination. Faced with the prospect of a reduced budget, management opted for a strategy of increasing revenue rather than cutting back on programs to fit the budget constraints. Though the Bureau had previously charged nominal rates for some products, from January 1988 it started charging prices for its products that were intended to recover dissemination costs.

Prior to implementation of the new policy, much thought was given to issues such as the roles and responsibilities of the Bureau as outlined in the Census and Statistics Act and the Australian Bureau of Statistics Act. It was necessary to ensure that the Bureau continued to fulfil its charter, and could demonstrate this in simple statements. It was decided that it would not be reasonable to recover, from individual users, all the costs incurred in producing statistics.



The logo

For the Bureau to successfully collect statistics and market its products, it needed to foster brand recognition among its respondents and customers. It was recognised that an appropriate corporate logo, which could be used consistently and conspicuously on all publications and stationery in order to immediately identify the Australian Bureau of Statistics, would significantly help these processes. It was especially important that respondents to Bureau statistical collections recognise that they were handing their private details to a trusted organisation. Having a logo would help the ABS to meet this goal.

Following much design work, a logo was chosen that successfully incorporated some symbols already in use. The logo was launched in 1988, and phased into use as existing stocks of printed material were replaced.

The ABS logo is still in use, and is as important today as ever. Over the years it has come to be identified, in the minds of respondents and clients, with the Bureau's reputation for accuracy and integrity.

On the other hand it was deemed acceptable to recover some of those costs from organisations and individuals who obtain particular benefits from the use of statistics, a particular benefit being a benefit beyond that acquired by the general community. The philosophy was succinctly put by the then Statistician Ian Castles, that a public good should be freely available but that a particular benefit should be paid for. This new rationale was carefully explained in numerous documents.

As expected, once charging was established, client demands for many Bureau publications were quickly rationalised. Some publications that had been disseminated widely experienced a sharp decline in demand. On investigation the Bureau discovered that these publications, while accepted happily when free by various agencies, were not in fact used. This important information was quickly employed as the Bureau embarked on a comprehensive strategy of product rationalisation. Under the guidance of Bill McLennan, the aim was to discontinue low value activities so that the Bureau could focus its attention on existing and new products for which there was genuine demand, and in so doing help to meet its revenue targets. The strategy also provided an incentive to strengthen the relationship with ABS clients.

'The best indicator of customer interest in certain products or services is whether they are prepared to pay for the privilege of receiving them.'

Dennis Trewin, 'Strategic developments in dissemination and marketing', *Journal of Official Statistics*, Volume 9, No.1, 1993.

Incorporated in the user pays philosophy was the need to implement a market-oriented approach to statistics. This marked a move away from the traditional collection or product-oriented approach.

Early in 1988 the Bureau engaged a marketing professional with extensive experience, and embarked on a program of education in the principles of marketing. All Bureau staff involved in collection and dissemination were encouraged to become involved in marketing their products. At the same time a network of specialist marketing units was established to provide advice and help to subject matter specialists.

The 1989 Marketing Plan marked the Bureau's first serious attempt to identify clients and deliver what they wanted. It enshrined the principles of the Bureau's user pays regime, and melded them with its mission as set out in the Corporate Plan, to produce a way forward in the new, more market-based environment. This first plan was regarded as experimental, but it had a huge influence on the activities of the Bureau, particularly on its relationship with clients. There followed a number of generations of the marketing plan over the next decade, as the Bureau's understanding of marketing grew.

A succession of marketing plans

After the introduction of the 1989 Marketing Plan, there followed a 'let a thousand flowers bloom' period of marketing experimentation, then a period of consolidation of products and services, and of marketing activities. Marketing extended dissemination to reach new and different client groups.

By 1992 the Bureau had learnt many lessons and had many successes. It was felt that it was time 'to move from a largely experimental phase of marketing to a more coordinated and focused approach' ('Marketing in the ABS', October 1991). These lessons fed into the Strategic Marketing Plan of 1992, which focused on a more structured approach to satisfying client needs while maintaining the emphasis on revenue raising. It also stressed the importance of the Bureau presenting a united team to external clients, and removing any parochial tendencies within individual parts of the Bureau. A number of market research and client satisfaction surveys conducted in the preceding two years were also used to inform the strategies outlined in this version of the plan. Coinciding with this was the establishment of a working group on improving the Bureau's marketing performance. Its recommendations included revenue raising and cost cutting initiatives, and improvement of consultancy services.

'The ABS long-term marketing performance will be improved through the continued development of the consultancy services. ABS senior management should acknowledge this and the need to increase the proportion of effort devoted to these activities over time.'

Dick Crockett, 'Working group on how to improve ABS marketing performance – Interim report', 1992.

Following much development work, a new strategic marketing plan, called the Client Services Plan, was released in 1997. It outlined further measures aimed at increasing the focus on client needs and providing products that satisfied these needs through the client's preferred delivery method. It also emphasised that marketing and client service were a Bureau-wide responsibility. In particular, drawing on market segmentation work carried out in 1992 by consultant business strategists Gattorna Chorn, four primary market segments were identified: key clients; subscribers; ad hoc clients; and a 'specialist' segment, identified to cater for client groups with specialist requirements not adequately covered by the other three segments. It mainly covers the education sector and the media.

More readable and useful products

In this period there developed a closer focus on methods of data provision and service generally, and increased attention to product presentation, quality and promotion. Under Bill McLennan's guidance, the Communication Research Institute of Australia (CRIA) was engaged as consultant for a comprehensive redesign of Bureau publications, to introduce a consistent design and improve readability across the entire range. Implementation of this approach resulted in a better mix of tables and text, feature articles and improved explanatory text.

At the same time, work was done to improve the use of graphics in ABS publications. A particular emphasis was to ensure that graphs clearly represented the story being told by the underlying statistics. Guidelines were developed for use by ABS staff. These guidelines were heavily influenced by the work of two American researchers, Bill Cleveland and Edmund Tufte.

The greater emphasis on charging for ABS's products and services led to some rethinking of how to satisfy the ABS' public service obligations. As a consequence, the Bureau introduced the Library Extension Program, by which a wide range of publications was provided free to participating libraries in the interests of maintaining a high level of community access to key statistics. Today the program's main focus is on providing training and assistance to member libraries in finding and understanding ABS products and data.



Beattie Monahan was one of the early coordinators of the Library Extension Program. Seeing a need for topic-based help for libraries he developed 'Beattie's Best' guides to ABS data sources on a variety of topics.



'Quality starts with me' was the slogan for the training made available to all Bureau staff in the early 1990s which encouraged them to focus on clients' needs.

Under the influence of Ian Castles as Australian Statistician, the Bureau started to place more emphasis on analysis in order to add value to its statistics by making them more useful. Analytical content started to appear in publications to complement the tables and data.

"Two factors sum up the change in the Bureau's performance since the arrival of Mr Castles. He is making the Bureau's output more analytical, and he's making it more "user-friendly", as the computer boffins say."

Ross Gittins, Sydney Morning Herald, 7 March 1987.

Next came a focus on quality client service. It was a decision of management that everyone in the Bureau should attend a course on this concept. Many did, leading to an across-the-board understanding of the importance of maintaining contact with clients and focusing on what they needed.

In August 1992, with a couple of years of marketing experience behind them, all ABS senior executives took part in a Marketing Strategy Workshop led by business strategists Gattorna Chorn. The aim of the workshop was to identify any weaknesses and areas of possible improvement in the marketing program and organisation structure in order to improve marketing focus and organisational culture. It also sought to improve coordination and teamwork among the various parts of the Bureau in implementing the organisation's marketing program. Gattorna Chorn consultants also collaborated with senior management in running an organisational effectiveness survey among Bureau employees and clients to identify the various client categories. This survey led to market segmentation, a refinement of the concept of the client and a readjustment of the marketing approach.



The library

In 1906 one of the first undertakings of the newly appointed Commonwealth Statistician was to ask statistical agencies throughout the world to furnish their statistical publications to the Bureau and to enter into an arrangement to exchange publications into the future. He also arranged a collection of reference works and relevant journals relating to statistics, economics, finance, and so on. With these acts Knibbs created the basis for a well equipped library for the Bureau which has served it well throughout its history. He did this because he saw the Bureau not just as a factory for the production of statistics, but also placed significant value on research and analysis of the statistics. After he left the position of Statistician he regretted that more could not be done.

'We sorely need analysis of the great abundance of statistical facts in our possession.'

Letter from George Handley Knibbs to Charles Wickens, 17 June 1925.

By the 1930s the Bureau clearly had a well stocked library, but access to the resource was proving a little difficult due to the inability of the person handling the library to read English (although he was believed to be the author of a book in Danish).

'... if you wanted a book out of the library, you had to tell [the librarian] what size it was, how thick, what colour the binding was, then he'd bring you three or four to pick from.'

Sir Roland Wilson interviewed in 1984.

So Wilson arranged to hire the Bureau's (and probably the Commonwealth's) first female librarian. Dora Whitelaw was a mathematics major straight out of Melbourne University. By the beginning of the Second World War, the librarian had been joined by at least one assistant. Whitelaw left during the war, and her position was filled by another librarian. By the early 1950s the library included one librarian-in-charge, one librarian and one assistant.

With the integration of the state offices in the 1950s the Bureau's library became a network of libraries.

By the 1980s the library had expanded its role beyond servicing the internal needs of the Bureau's staff, to also provide information about ABS publications to the wider community. For example in 1981 the library was one of the founding members of the Australian Bibliographic Network, which allowed information about the Bureau's publications to be transmitted

throughout Australian libraries and around the world. The Bureau's libraries themselves also began to service ever more clients requiring information directly from Bureau publications.

The 'public good' role of the library was expanded significantly with the development of the Library Extension Program in 1991. This national partnership between the ABS and Australian libraries provide free publications, training and support to libraries. It has become an important part of the Bureau's commitment to enabling free community access to ABS statistics. Today some 550 libraries around Australia are members of the LEP. These include public libraries, TAFE and university libraries as well as the National Library, all the state libraries and the Parliamentary libraries.

Originally the publications were provided in paper format, but since August 2001 they have been available to libraries through a free online eLEP service on the ABS web site.

The library is also involved in a continuing exchange of Bureau publications with those of other statistical offices around the world.

Today the ABS web site and the LEP have freed the internal library to return to being primarily a knowledge resource for ABS staff. While paper publications continue to be an important resource, the library also provides numerous electronic research resources throughout the ABS network.



The Bureau's web site (originally known as 'ABS Statsite') was released on 30 June 1995. This photo was taken for the launch of a new web site logo in 1998.

(L to R): Heather Minol, Anne-Marie Rushby (née Flaherty), Vikki McLaughlin (née Cartwright), Merry Branson and Tim Smith.

By the early 1990s CSIRONET had been hived away from CSIRO and consequently become too expensive for the Bureau to use as an electronic data dissemination network. The Bureau looked at further developing its own infrastructure. PC-AusStats, a personal computer version of the earlier CSIRONET version of AusStats, was released in 1992.

Following much planning, on 30 June 1995 the Bureau launched a public access web site, www.abs.gov.au, aimed at disseminating statistical information to anyone who wished to download it. By 1998–99, hits on the web site had reached nearly nine million. Since then all ABS publications, spreadsheets, data cubes, research papers and information papers have been available from the ABS web site. The site also contains other statistical support material such as the Statistical Concepts Library, Directory of Statistical Sources and extensive school curriculum materials for teachers and students. Over the years, the web site has expanded to include AusStats in 2000, directory of statistical sources in 2001, e-commerce and AGLS in 2002 and sales of paper publications in 2003. From July 2005, downloads of publications became available free from the web site.

Throughout the 1990s, the Bureau developed and launched the ABSDB as its core data warehouse, and repository of all published data. It stores 'multi-dimensional' datasets from which tables and time series can be extracted. It also holds descriptive information – 'metadata' – related to the detailed data holdings from which new outputs may be derived.

The ABSDB was developed in response to recommendations in a report prepared by Professor Bo Sundgren of Statistics Sweden. He recognised that

increasingly statistics were to be released in a variety of publications and on different media. To ensure consistency, they should all be produced from the same output databases. The Bureau was the first statistical office to develop a data warehouse to support its statistical outputs.

Following the release of the 1997 Marketing Plan, segmentation of the Bureau client base resulted in significant changes in marketing strategy, and in resource organisation and use. Client managers were appointed to look after key clients and the specialist segment, and centralised marketing and further centralisation of client servicing operations were introduced.

By the late 1990s the focus had shifted to increased electronic dissemination, as clients became more sophisticated users of technology. Internally, data were stored and processed on a networked PC based system with the aim of integrating data management in order to better support client services. Externally, web based technology started to offer substantial opportunities for improved dissemination arrangements. AusStats, a web enabled version of PC-AusStats, was launched in 1998. This is a subscription based service where clients purchase subscriptions, with all downloads debited against their account.



Rob Martyn, Mary Beneforti and Gary Sutton at an information session given on the publication, *The Health and Welfare of Australia's Aboriginal and Torres Strait Islander Peoples, 1999*. The information session was given to the Department of Health and Ageing in 1999.

The Bureau provides other avenues for clients to purchase ABS products online. ABS@ is essentially a copy of the ABS web site installed in the client's intranet for unlimited access to the statistics, after paying an annual fee. Clients of this service are generally Commonwealth and state government agencies. Finally, ad-hoc e-commerce enables clients to purchase ABS products through a secure on-line banking facility. Clients can also subscribe to a daily email notification service on ABS daily releases in subject matter areas nominated by the client. The advice contains links back to the associated Summary Publications.

Today

Publications retain an important role in providing access to official statistics. Over the years Bureau publications have evolved to include graphs, commentary and analysis as well as statistical tables to facilitate understanding and make the main findings widely known. Also in recent times the Bureau has expanded its range of analytical publications. In particular, a number of thematic or 'all about' publications have been developed, such as the *Australian Women's Yearbook*, *Australian Social Trends*, *Australia's Environment Issues and Facts*, and most recently *Measures of Australia's Progress*.

Use of microdata, or confidentialised unit record files, was stimulated by an agreement between the Australian Vice Chancellors' Committee and the Bureau to make microdata more available to universities for research. The availability of microdata has been further advanced with the introduction of the remote access data laboratory, which delivers unidentifiable microdata to the user's desktop through secure web arrangements, and a Bureau onsite data laboratory to which users come to access unidentifiable microdata.

Basic microdata are available to users on CD-ROM; expanded files with more detail are only accessible through the remote access data laboratory; and specialist files are accessible only at the onsite data laboratory.

State statistical forums are now held regularly to identify and discuss the statistical priorities of state and territory users and to assess the adequacy of the Bureau's statistical response. They largely replace the Conferences of Statisticians discontinued in 1996, but because they are based around the state government representatives of the Australian Statistics Advisory Council, the participants are more senior than had been the case with the Conferences of Statisticians in the 1980s and 1990s.



Suzette Skobier and Steve Kilgallon in the New South Wales office bookshop in the late 1990s. Most of the state offices have a bookshop which is open to the public.



Ian Castles and Warren Horton (then Director-General of the National Library) assist ABS staff Philip Mitchell and Richard Lynch in carrying the Colonial Microfiche into the National Library at its launch in 1989.

The Colonial Microfiche is a collection of over 250 000 pages of information stored on more than 3 000 microfiche. It represents most of the statistics published by the various colonial bureaus and their precursors. The Historical Microfiche includes publications released by the central office of the ABS between 1901 and 2001 and publications issued by the state offices between 1984 and 1993.

Within the Bureau there are a number of ongoing partnership arrangements with state governments. These take the form of jointly funded national centres, residing in various state offices and in the central office, and specialising in particular subject areas, such as education and crime. As well, the statistical direction of the national centres is guided by valuable input from a number of user groups, representing community, government, business and academic interests. The Bureau user groups currently include groups for economic statistics and labour statistics.

Today emphasis is being placed on the Bureau's coordination role with the implementation of the National Statistical Service. This concept recognises the fact that much of the statistical information required to inform policy makers is contained in the administrative systems of government organisations. As well as Bureau statistics, the National Statistical Service includes the outputs of direct statistical collections conducted by all government agencies to support government activities, and important statistics that can and should be generated as by-products of the administrative processes of government. Maximising the usefulness, availability and comparability of these data will ensure improved policy formulation through access to better, broader and more comparable information; better monitoring of the effectiveness and efficiency of program services; improved access to and use of the data by the wider community; and reduced overall costs for the provision of government information services. This initiative has resulted in a renewed interest in the use of outposted officers.

A recent initiative in the National Statistical Service is promotion of the concept of a National Data Network. This would involve establishing a distributed system which supports the management, sharing, integration and analysis of multiple data sources which are owned and operated by different organisations. The ABS has been discussing the National Data Network with a broad range of agencies and forums to get feedback and expressions of interest in participating in a 'demonstration network'.

The Bureau has come a long way, in its client relationships, products and services, through a number of stages. Today there is a clear understanding of the fine balance between public and private good, and of where the Bureau exists in a competitive market, managing both to satisfy the public good and to service the needs of individual clients.

But some things remain the same. The role of a statistical agency is to inform, as efficiently and broadly as possible. A close working relationship with clients, together with detailed attention to the best way of providing the best information, ensures that this duty is discharged.

Community service and public good

The 'public good' aspect of the Bureau's charter is enshrined in the Census and Statistics Act, which states that statistics are to be provided not just to the minister but to all members of parliament (who are the representatives of the people). This was of particular importance in the past, when Parliament was a major vehicle for the release of information to the general public. Today the media plays a much bigger role in relaying information and highlighting significant issues. However the legislated imperative remains to make all statistics available to the public through tabling in Parliament.

20 (1). The Statistician shall compile and tabulate the statistics collected pursuant to the Act and shall publish such statistics or abstracts thereof, as the Minister directs, with observations thereon.

20 (2). All statistics or abstracts prepared for publication and the Statistician's comments thereon (if any) shall be laid before both Houses of the Parliament.'

Census and Statistics Act 1905.

Throughout the century of its existence the Bureau has considered informing the public to be one of its key duties. In 1910, in one of many pamphlets and speeches Knibbs penned about statistics, he wrote:

'... it is universally recognised that an adequate statistic is essential to a critical review of a country's progress.'

George Handley Knibbs, *The Problems of Statistics*, 1910.

Statisticians from Knibbs onwards interpreted the role of the Bureau as providing that 'adequate statistic'.

In 1948 a Bureau document explains:

'The Statistician's prime business is to provide the material necessary for the making and carrying out of government policy. Complementary to this is the job of providing the public with enough information to enable it to make some judgement on matters submitted to the electorate.'

CBCS, untitled and unpublished paper, 1948.

Though 'public good' had always been the purpose towards which the Bureau strove in collecting and distributing statistics, in the late 20th century it started to be called a 'community service obligation'. Around this time the Bureau's corporate goals, direction and purpose were clearly defined. As the Bureau moved to more of a user pays philosophy for tailored, client-specific statistics and clients were being identified, it became necessary to state explicitly what was once taken as self-evident, that clients included not only those who were requesting and paying for specific data, but also the public who as citizens had the right to be informed by statistics in order to make well informed judgements when called on to vote.

In 1998, in a speech to the Sydney Foreign Correspondents Association, Bill McLennan said:

'I must stress that the ABS has "public interest" obligations to ensure that basic statistics, at least, are both readily available and affordable, and we all take these obligations very seriously.'

Bill McLennan, 'Taking the Nation's Pulse', Address to the Foreign Correspondents' Association, March 1998.

Today, the Bureau's dissemination strategies are based on the view that the 'first copy' of released material is for public good and the relevant overheads are funded from the ABS budget appropriations. As such, charges are only applied to those activities where additional costs are incurred beyond the mix of input and outputs envisaged by the Statistician as being publicly funded, for example further coding and additional labour costs, and other service delivery costs.

The services provided by the Bureau under its community service obligation include: publications free of charge to parliamentary libraries, and many other libraries through the library extension program; publications and limited consultancy to the media and parliamentarians; and main features, media releases, selected summary statistics and information about statistics (metadata) available on the ABS web site. Following increased funding, the web site service was recently expanded to include the provision of all publications free on the web site. This service will expand in the future to include some previous publications.



Badge and letterhead produced by the Bureau when Australia hosted the 1967 International Statistics Institute Session.

Opposite: Detail of a gift to the Australian Statistician from an international visitor.

A good international citizen
INTERNATIONAL RELATIONSHIPS

chapter ten



The importance of international relationships

From the very beginning of the Commonwealth Bureau of Census and Statistics, collaboration with official statistical agencies in other countries has been very important to the Bureau's development. Under Knibbs' leadership, the first Year Book recorded that:

'Foreign Governments were asked – (a) to furnish their statistical publications, including such back numbers as could be spared; and (b) to enter into a general agreement for exchange of publications. It would be impossible to speak too highly of the generous response which has been made to this request, a request to which a young country like Australia can make adequate return only in the somewhat distant future.'

Commonwealth Bureau of Census and Statistics, *Official Year Book of the Commonwealth of Australia 1901–1907*, No. 1, 1908.

Over the years there has been an increasing emphasis on exchanging technical knowledge with other countries. In 2001 the former Australian Statistician Bill McLennan commented:

'It is good to record that some significant return has been made to the international statistical community generally over the years since then.'

Bill McLennan, 'The development of official statistics in Australia, and some possible future challenges', in *ABS, Year Book Australia 2001*, No. 83.

Today the Bureau continues to place considerable value on its relationships with other national statistical agencies and with international statistical organisations. It perceives international relationships in statistics to be important because they support the development of international standards, which in turn enable valid inter-country comparisons by international agencies and by countries. These relationships also provide an opportunity to exchange knowledge, which carries the great benefit that each country does not have to invent its own methods, but rather can build on the work done by others. Finally, these relationships enable the technical support of statistical agencies in developing nations. Objective four of the Corporate Plan is to be:

'... an active contributor to international statistical activities that are important to Australia or the region.'

ABS, *Corporate Plan*, 2000.

Internationally the Bureau is widely seen as fulfilling that commitment. Its contribution to, and influence on, international statistical issues is disproportionate to Australia's size. The Bureau has played a key role in the United Nations (UN) Statistical Commission and other UN groups, as well as the International Statistical Institute. However there have been times in the Bureau's history when it was not always so outwardly focused, in large part influenced by the cost and difficulty of international travel.

Working from within the British Empire

Before Federation some Statisticians of the colonies were already well known beyond Australia. In particular the NSW Statistician from 1886 to 1905, Timothy Augustine Coghlan, was the first Australian to be elected to the International Statistical Institute, in 1907. For more than 20 years after the Bureau was established, Coghlan was living in London as the Agent General for NSW. The Australian government found this very useful, and would request Coghlan to attend various international statistics events in place of the Commonwealth Statistician.

Australia's first Commonwealth Statistician, George Handley Knibbs, was also well recognised internationally; his work on the Australian Year Book was acknowledged by contemporaries. CW Cousins, the first Statistician of South Africa, personally thanked Knibbs for the example he set, in the preface of the Union of South Africa's Official Year Book No. 1.

'Amongst other publications which impressed the council ... more perhaps than any other [was] the Year Book of Australia published by the Commonwealth Statistician ... I take this opportunity of acknowledging to the authors of these publications, and in particular to Mr. G. H. Knibbs, C.M.G., the Commonwealth Statistician, my great obligation to them and to the example they have set.'

CW Cousins in preface of Union [of South Africa] Office of Census and Statistics, *Official Year Book of the Union* No. 1, 1917.

Likewise, Malcolm Fraser, first Statistician of New Zealand, was glowing in his praise of Knibbs in a letter to him in 1919.

'I cannot conceive any conference of Statisticians of the Empire without you. I know that on account of your experience and pioneer work in Australia you would bring more initiative and influence to the Conference than any other Representative and without your assistance the work of the Conference would suffer. I freely acknowledge New Zealand's indebtedness to you; your work in Australia has been a constant help and inspiration to us here ... No other Statistician in the Empire is so well known nor is there any whose views carry more weight – but your reputation is not confined to the Empire; it is world-wide.'

Letter from Malcolm Fraser, Statistics New Zealand to George H Knibbs, 1919.

A later New Zealand Statistician, Sir George Wood, described Knibbs as '... among the most respected of the international statisticians of his day'.

Despite Australia's physical isolation, the Bureau had some direct involvement in international statistical affairs. Knibbs submitted a paper to the 1907 International Statistical Institute session, and his first visit overseas as Commonwealth Statistician was in 1909. Knibbs represented the Commonwealth at two conferences, as well as visiting a number of countries to enquire into the organisation and equipment of the various census offices. He also attended the International Statistics Institute session although he was not at that time a member. He nevertheless received a personal invitation due to his international standing as the Commonwealth Statistician for Australia. Coghlan also attended that conference in 1909, as he was already an elected member and living in London at the time. Knibbs was elected to full membership of the International Statistical Institute in



1909 International Statistical Institute conference participants including Sir George Handley Knibbs (Knibbs is standing in front of main doors to the immediate right of the tall man with the black top hat).

Right: George Knibbs began his work as Commonwealth Statistician by requesting that other international agencies provide the Bureau with their statistical bulletins and to agree to ongoing exchanges of such information. This is an example of an acknowledgment of receipt of one such bulletin, a Swiss volume on business statistics in Zurich. The printed postcard in German suggests that numerous receipts were sent out on a regular basis.

Opposite page: Participants at the 1935 British Commonwealth Statisticians Conference in Ottawa, Canada.

Back row (L to R): SA Cudmore (Canada), TH Hammond (UK), AV Coverley-Price (UK), EC Ramsbottom (UK), H Marshall (Canada).

Middle row (L to R): GS Dunnett (Imperial Economic Committee), S Lyon (Irish Free State), JW Butcher (New Zealand), R Wilson (Australia), H Leak (UK), AE Kirkus (UK).

Front row (L to R): CW Pearsall (Union of South Africa), W Halfyard (Newfoundland), DB Meek (India), RH Coats, (Canada), Sir F Floud (UK), CT Houghton (UK).

1913. However, within a year World War I completely disrupted international cooperation on statistical matters.

George Knibbs made a further trip overseas to attend the first Conference of the Statisticians of the British Empire in 1919–1920. This was a nine month excursion to Britain. He attended several meetings on behalf of other Australian government departments (such as a meeting of the International Electro-technical Commission for the ‘High Commissioner’s Department’), visited the London and Edinburgh Statistical Offices to study census machinery and methods, spent considerable time lobbying the Board of Inland Revenue of the United Kingdom (UK) for the Australian government in relation to the taxation of Australians, and also attended the Conference of Statisticians of the British Empire (the conference itself lasted for over a month).

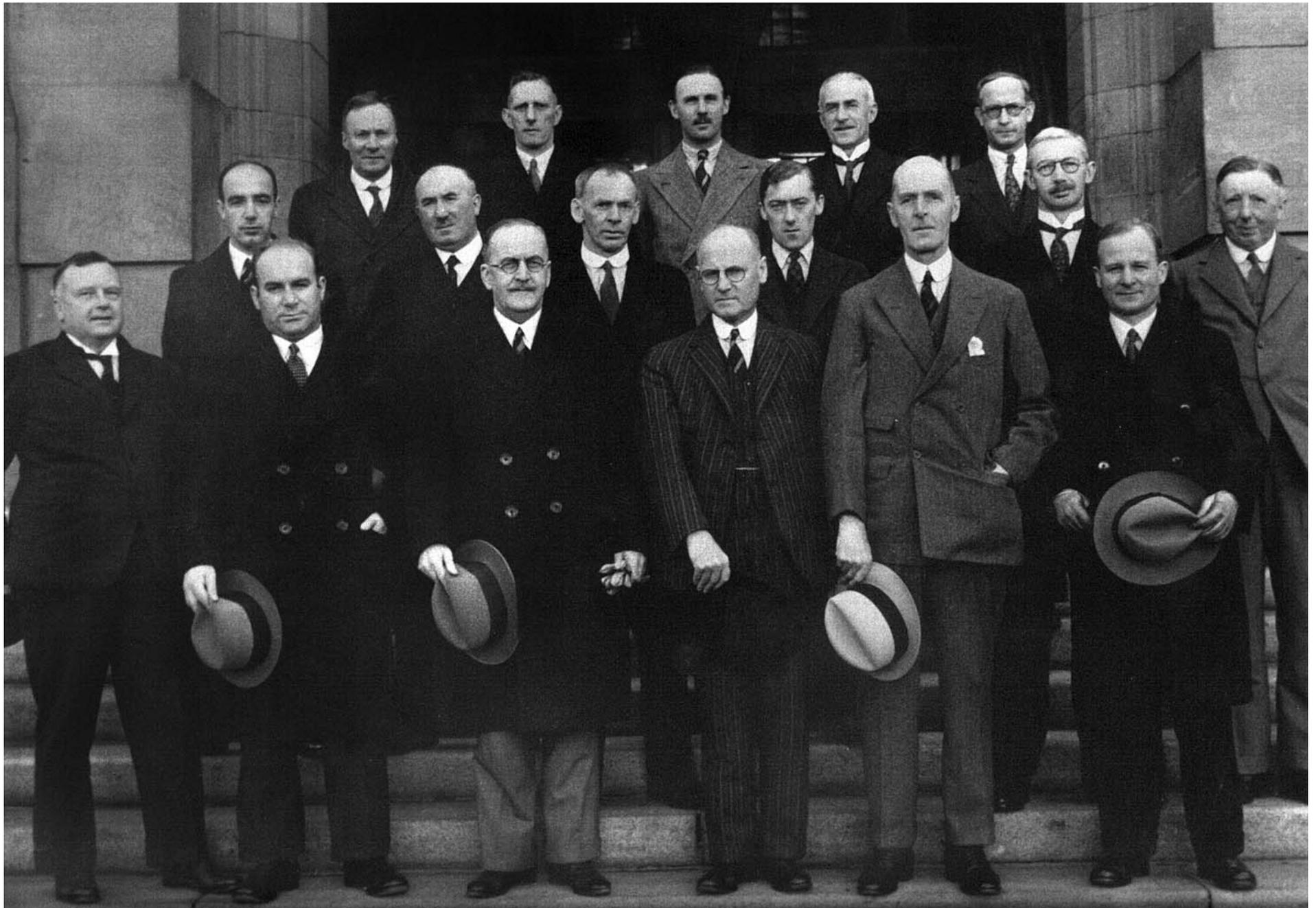


Australia played an important role at this conference, held in London from 20 January to 26 February 1920. The conference was dominated by the question of whether and how to establish a central Imperial Statistical Bureau with responsibility for the statistics of the countries of the British Empire. The Statisticians of the self-governing dominions including Australia were concerned about the impact the decentralised UK system might have on any Imperial Bureau. In particular, there was a concern that an Imperial Bureau should not be established without the prior establishment of a central UK Bureau. The concern was that the dominions would end up paying for an agency which spent the bulk of its time and resources organising the statistics of the UK. Knibbs was a strong supporter of the idea of an Imperial Bureau (and a likely contender for the position of Imperial Statistician), but was unable to support the plan without changes in Britain.

‘Unless this country [the UK] shows that it can organise the statistics of the United Kingdom of a complete character like the statistics of the self governing dominions the more doubtful it is that any organisation we are going to suggest will do any better.’

George Handley Knibbs, memo sent to the Secretary of Department of Home Affairs while Knibbs was still in England, 1920.

In effect this position meant that a Central Bureau for the British Empire was never established. One collaborative effort did remain; in 1926 a separate Imperial Conference recommended that a publication by the UK Board of Trade, which collated some statistics for the Empire, should continue to be produced.



A good international citizen

While Knibbs did travel overseas on at least two occasions, for the most part the Australian government did not see a need to send representatives to many of the international statistics conferences and meetings during the first half of the twentieth century. At first Coghlan was available to represent Australia at some. But even when Coghlan was unavailable, it was quite common for the Australian government to request that the British representatives also represent Australia, such was the relationship with England during this period. It took until World War II for this view to start to change.

After the retirement of Knibbs in 1921 there were only a few opportunities for the Commonwealth Statisticians to travel abroad. Charles Wickens visited New Zealand on at least one occasion in the early 1920s and attended an Imperial Conference in 1927 in London which aimed to set uniform standards for trade, agricultural and other statistics. But for the most part there was little direct contact overseas.

The main emphasis of international activity during this period was exchange of knowledge. Despite the lack of direct international contact, for much of the 1920s and early 1930s the Bureau was aware of and contributing to international statistics. Mail, although slow, allowed the Bureau to remain in contact with overseas organisations, receiving international publications and contributing to international statistical debates. For example, in the late 1920s and early 1930s correspondence between the Bureau and the International Labour Organization detailed the experiences of the Bureau in the development of various collections, including Knibbs' cost of living study of 1913.

The Second Conference of British Commonwealth Statisticians (previously known as the Conference of Statisticians of the British Empire), delayed by the Depression, was held in 1935 in Ottawa, Canada. Edward McPhee was Commonwealth Statistician, but Roland Wilson attended the Conference in his stead. Wilson's contribution to that conference was particularly strong in the areas of prices and trade. He was well respected at the conference, and if he did not offer an opinion on a matter (which was not often) he would be asked. The conference had no single goal, but covered a wide array of mostly economic statistics, including trade and agriculture. The plan for the proposed Imperial Bureau that had so dominated the previous conference in 1920 was hardly mentioned. However the UK Board of Trade's statistical abstract for the British Dominions and Protectorates was reviewed and found to have '... statistical material of much value'.

A new world after the war

After World War II the Bureau began to re-establish international links. Again the main emphasis was exchange of knowledge, but with the advent of the UN Statistical Commission the Bureau started to actively participate in the development of international standards.

Wilson had benefited greatly from the travel he had been encouraged to undertake by Giblin to study in London and North America. So as Commonwealth Statistician he saw great advantage to the Bureau in providing opportunities to others to travel. For example he sent Keith Archer, then his assistant, to the World Statistical Conference in Montreal in 1947.

'Wilson never failed to give people opportunities to go overseas. He was slated to go to a conference in Montreal in 1947 ... and in the event he couldn't go ... I went off at eight days' notice, to Montreal. He said: "Don't worry about the conference, that's only five days. I've arranged for you to have ten weeks in the Dominion Bureau, at the United Nations and four weeks at the Bureau of Census in Washington".'

Keith Archer interviewed in 1984.

After the war, many more international discussions occurred in all areas of government, including statistics. The importance of rebuilding countries after the war meant that there was a significant emphasis on economics and economic statistics. In particular, by the mid 1950s a system of national accounts was being developed internationally and this was of great interest to the Australian Bureau where estimates of national income had already been prepared by various researchers. The advent of air travel was also a factor in the increasing international contact. This new access to the rest of the world culminated in Australia hosting the third

Conference of British Commonwealth Statisticians in 1951. The Conference was first discussed in 1947.

'The War has caused a long gap and greatly accentuated the need for a Conference. An informal meeting of some Statisticians (present in Washington for another purpose) last year unanimously decided that an early Conference was desirable and that ... the most appropriate place of meeting would be in Canberra.'

Stanley Carver, note for the Treasurer, 1948.

However it proved difficult to set a date for the conference, mainly because of the overseas commitments of the various participants, as well as new work in statistics required for economic reconstruction after the war. The conference was originally mooted for 1949, but was delayed several times before a date in November 1951 was set. Even so, that date proved difficult for several delegates, who had to pull out. In the end delegates from the UK, Canada, India, New Zealand and Ceylon attended, and observers were sent from Ireland, the Commonwealth Economic Committee and the UN. The conference addressed a wide range of issues including classifications, and it resolved to meet at least every five years thereafter.

The meeting was a turning point in the Bureau's professionalism. It allowed the staff of the Bureau to recognise that the problems they dealt with daily were the same problems facing statisticians throughout the world. The conference gave the Australian staff a sense of being part of a worldwide profession and an understanding that statistical difficulties could be solved cooperatively rather than each country attempting to solve them in isolation.

'This meeting ... afforded the opportunity for many budding statisticians ... to see world professionals wrestling with the

very issues which confronted us every day. Suddenly words like scope, coverage, definition and classification became more meaningful. Mathematical statistics had always been recognised as a professional field of work, but now subject matter statistics came to be seen as a truly professional interest, worthy of the attention of career statisticians.'

John Miller interviewed in 2000.

After 1951, the Bureau began to pay even greater attention to what was being done overseas. In the post-war period new international arrangements for sharing statistics appeared with the formation of the United Nations Statistical Commission and its statistical office. After World War II, a group of statisticians met to discuss a broad program of statistical development. They recommended that a permanent Commission take over the role of the League of Nations Statistical Committee. While there had been other international agencies before this, the UN Statistical Commission seemed to have greater authority and influence and had the potential to make real changes. Its primary agenda items in those early years were the development of national accounts and statistics based on sampling. Australia was elected to the UN Statistical Commission in 1952.

As acting Commonwealth Statistician, Stanley Carver first attended the United Nations Statistical Commission for its seventh session in 1953. From that time the Bureau attended all but one of the sessions until the 1970s. The attendees regularly included the Commonwealth Statisticians of the time.

'The United Nations Statistical Office provided a kind of forum in which it became much easier to measure ourselves against other countries and through which we made contact with statisticians in other countries, so there was much more

international integration in statistics after the War.'

Frank Horner interviewed in 1984.

The development of international standards became a significant element of the work of the UN Statistical Office, and Australia was actively involved. The Bureau was also keen to implement the newly developed international standards in Australian collections, particularly in relation to the System of National Accounts and measurements of foreign trade.

'The development of international standards was another major factor in the development of the Bureau and official statistics. As the United Nations Statistical Office developed ... more and more international standards were developed and adopted internationally and in Australia. Ian Jones, as Director of Development Branch, played a major part in obtaining and promoting the use of these standards within the Bureau.'

John Miller interviewed in 2000.

As discussed in chapter 7, in 1951 Ken Foreman joined the Bureau. He was employed specifically to develop the methodology of sampling. The decision to employ someone specifically suited to this task was not taken in isolation, but came out of discussions with staff in other international agencies. Foreman spent all of 1952 studying in the United States, to bring the latest sampling techniques to the Bureau. Until that time, virtually all Bureau statistics were collected in censuses. With the introduction of sampling, the Bureau started to be actively interested in the possibilities for surveys into household expenditure and the workforce that were already being undertaken overseas.

Hosting the Conference of the British Commonwealth Statisticians in 1951

The Conference of the British Commonwealth Statisticians in 1951 was the first international meeting the Bureau hosted.

In organising the conference Wilson and Carver consulted heavily with Harry Champion of the United Kingdom on the timing, length of the Conference, whom to invite, and the agenda. Because it had been so long since the last meeting it seemed that every possible topic was critically important to at least one country. And unlike the last conference when participants had unlimited time, this conference had to be fitted between other international events including an International Statistical Institute session in Calcutta in December of that year. So the agenda items were arranged into two sections: those that would be discussed fully and those that could be discussed at the discretion of a steering committee. The United Kingdom and Canada wrote most of the papers for the agenda items, with Australia, New Zealand and India contributing a few. The Australian Bureau also undertook to write background historical notes.

The conference, at the Hotel Canberra, had to be held when Parliament was not sitting. When Parliament sat there was no accommodation and no conference facilities were available.

The staff of the Bureau went to great lengths to arrange a number of 'diversions' for the conference participants. For example, on the middle weekend of the conference they were taken on an excursion to the surrounding region including Yarrangobilly Caves, a sheep station and, as the highlight of the trip, an inspection of the construction of the new Snowy Mountains Hydro Electric scheme.

Carver, who had been elected chairman, was often unable to attend sessions due to illness, and problems with the retail price index. Nevertheless the conference was a success. The report states that this opportunity for an exchange of views between Commonwealth countries '... would lead to statistical improvements in all countries represented'. It also found that '... the intangible results of personal contact and discussion outside the sessions will be of the greatest value'.

After this conference Carver wrote individually to all the key delegates including those who were not able to attend. The letters were personal and seemed aimed at ensuring that the camaraderie that had sprung up at the conference was strengthened.

'You chaps awakened us to all that we are missing by not keeping close and regular contact with you and world statistics. It has been one of the disabilities of our remote position in world geography but it is a disability which we will certainly overcome.'

Letter from S Carver to Dr B Ramamurti, New Delhi, 17 January 1952.

'... we the host country received more benefit than anybody else who attended conference because of the great stimulus which it gave to statistics and to the officers engaged in statistics in Australia. It generated not only new ideas but gave new enthusiasm throughout our whole organisation. In addition it gave a great additional knowledge and experience to us all here and this will result in the raising of the quality of our work.'

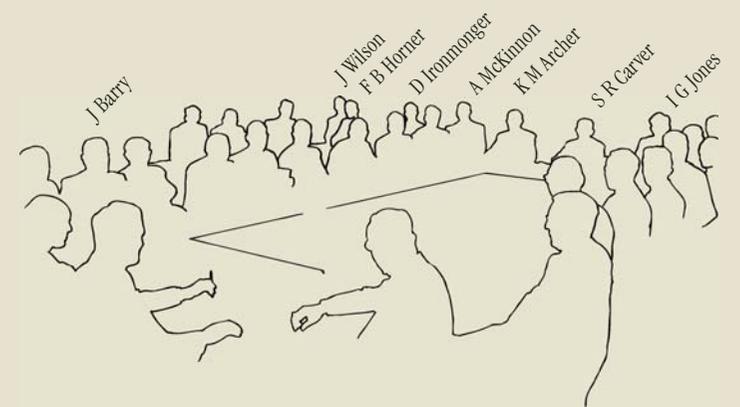
Letter from S Carver to Mr J Raats, Pretoria, 17 January 1952.



Participants at the 1951 Commonwealth Conference.



British Commonwealth Conference participants at work, 1951.



A good international citizen



A good international citizen

In these ways Australia began to open up to the world of international statistics, although during the 1950s the Bureau was still primarily focused on major internal matters (rebuilding after the war and the integration of the state bureaus were major issues in this period). As well, the Commonwealth Statistician Stanley Carver was not completely comfortable with going overseas and taking on an international profile.

'Then Carver, who had a stammer and was a bit self-conscious in conferences and things like that, he did go overseas and made a lot of contacts but he never enjoyed it ... So from the early 1950s I used to go as his representative.'

Keith Archer interviewed in 1984.

Rather Carver seemed happy to broaden the international experience of all his senior staff. For example he did not attend the fourth Commonwealth Statisticians Conference in London, sending others in his stead. Likewise he was not one of the official members of the Australian delegation to the 1960 conference in Wellington, New Zealand although he did attend some sessions.

Opposite: The Australian delegation to the 1960 Conference of British Commonwealth Statisticians held in Wellington comprised: Dr Frank Horner (First Assistant Statistician), Keith Archer (Acting Commonwealth Statistician), Frank Stewart (Director, Development Division) and Ken Foreman (Director, Sampling Division), shown on the steps of the New Zealand Parliament Building.

Have slide rule, will travel

In the early 1960s the Bureau began to adapt its international role from exchanging ideas (primarily a learning role) to providing assistance to others. In part this new interest in other countries was prompted by Australia's involvement in the Colombo Plan.

In 1960–61 the Bureau began providing technical assistance for Papua New Guinea's Survey of Indigenous Agriculture. Assistance in other statistics soon followed, and many Bureau staff visited the statistical office of Papua New Guinea in the 1960s and 1970s. Several Bureau staff members held senior positions in the office at various times. While Papua New Guinea was then an external territory to Australia, this assistance appears to have set the Bureau on the path as a member of the international statistical community providing technical assistance. Senior Bureau officer Ian Jones had a significant influence on these developments.

In 1962 Keith Archer became Commonwealth Statistician. Under Archer the Bureau became more proactive in developing international relationships. Aside from the obvious benefit to the work of the Bureau, Archer saw international exchanges as development opportunities for his staff.

'Then, when came my turn, I saw to it that people did get overseas ... We didn't do badly with the overseas visits because Wilson was interested in statistics and he was secretary of the Treasury for most of the time that I was Statistician.'

Keith Archer interviewed in 1984.

The Bureau and the Colombo Plan

The Colombo Plan was created to strengthen the economic and social development of the nations of South East Asia and the Pacific. It was established in 1951 as the Colombo Plan for Cooperative Economic Development in South and Southeast Asia. Donor countries gave assistance in the form of education, health aid, training programs, loans, food supplies, equipment, and technical aid.

Australia was one of the significant donors under the plan and the Bureau played a role. In particular the Bureau provided statistical training programs and technical aid. A number of Colombo Plan students participated in the same statistical training as the Bureau's cadets under the Statistical Cadetship scheme. The Bureau also provided technical assistance to a number of countries under the Colombo Plan. Bureau officers spent time in Asia and the Pacific (and especially Papua New Guinea and Malaysia) assisting with the development or conduct of surveys and censuses.

Participation in the Colombo Plan encouraged the Bureau to look outwards and to consider aid to Australia's local region as a valid aspect of its role. It also exposed Bureau staff to different cultures and perspectives.

Officers of the Bureau continued to attend conferences, including all the Commonwealth Statisticians Conferences. During the 1960s it also started to participate in many more international meetings and to cooperate in international working groups. Staff of the Bureau began to see clear advantages to sharing information with others internationally, particularly as they struggled with the integration of economic statistics. The last years of the 1960s were significant for the Bureau's international standing.

'The international standing of Australian statistics was recognised in 1967, when the 36th Session of the International Statistical Institute and the 7th Conference of Asian Statisticians was held in Australia, and again in 1968, when Mr Archer was elected Chairman of the United Nations Statistical Commission.'

Jack O'Neill, Preface, *Official Year Book of the Commonwealth of Australia*, 1970, No. 56.

The 36th Session of the International Statistical Institute was held in Sydney in 1967. It was the first large scale international conference the Bureau hosted (there were 362 participants at this ISI session compared to only 39 participants at the Commonwealth Statisticians Conference in 1951). Since the early days of Knibbs' attendance, the Bureau had not sent regular delegates to these biennial sessions, preferring the Commonwealth Conferences. It had sent attendees to three sessions in the immediate post-war period, but then stopped until the 1960s. In 1963 one Bureau member attended, and in 1965 (the session prior to the one the Bureau hosted) the then Commonwealth Statistician went as a delegate, along with another officer. After 1967 the Bureau regularly sent delegates to the International Statistical Institute sessions, but it continued to also support the Commonwealth Conferences, including hosting for a second time in 1990.

Hosting the 36th session of the International Statistical Institute



The registration desk at the 1967 ISI session.

The 36th session of the International Statistical Institute was held in Sydney from 28 August to 2 September 1967 at the Wentworth Hotel. Memorabilia produced for the occasion included a boomerang and a pin showing a boomerang wrapped around a globe.

A large number of Bureau staff were involved in the organisation of the conference. Even the wives and families of staff became involved as hosts for international visitors staying in Canberra.



The Bureau's poster display at the 1967 International Statistical Institute session was organised by Bureau staff member Colin Johns.



Then Commonwealth Statistician Keith Archer addressing the 1967 International Statistical Institute session.





Mike Giles accepting the KMN award from the Malaysian High Commissioner in September 1972. He received the award for his work in advising the Malaysian statistical office on the planning and conduct of Malaysia's 1971 population census.

By the late 1960s and through to the mid 1970s, Australia had plenty of 'fingers in the international pie'. Other statistical agencies were seen as places from which the Bureau could learn. In 1968 John Miller was sent to work for a year at the US Bureau of the Census, to participate in the running of the US population census. Other Australians were sent to developing countries to provide assistance and to gain experience.

Throughout the 1960s and 1970s the Bureau started to branch out to different countries and organisations. In particular it started to provide assistance to its Pacific neighbours to set up their statistical agencies. It also had a significant influence on the development of what is now known as the Statistical Institute for Asia and the Pacific.

Often officers from the Bureau were outposted overseas into positions throughout the Asia-Pacific region. The Bureau arranged some of these placements, but often individuals perceived a personal value in serving in the statistical office of a regional neighbour and arranged their own transfers. No doubt some saw this mainly as a career opportunity, but wanting to make a difference in the lives of others also appears to have motivated some staff.

'After some soul searching . . . I reached the conclusion that a career in developing statistical systems was worthwhile and fulfilling, especially when it had to do with developing countries. While still with the ABS I started taking UN and other technical assistance posts in developing countries.'

Ron Fergie, personal comments, 1986.

'On reflection, I can say without equivocation that I am glad to have pursued a professional career in statistics – for 25 years in Australia and a further 9 in the UN. I have always been a believer in the importance of statistics, both for developed countries like Australia and for the less developed countries, which I have been privileged to serve in recent years . . . I hope that a concern for the less fortunate countries of our region will be kept alive in the Australian Bureau in the future. This kind of concern will become increasingly important both to the recipient countries and to Australia.'

John Miller, letter to Roy Cameron, 14 August, 1984.

The opportunity that the Bureau provided for staff to work in developing countries was often continued by the individual staff after their retirements, through consultancies and overseas appointments. This remains the case today.

The Overseas Newsletter

By 1974 there were so many Bureau staff posted overseas that a quarterly Overseas Newsletter was established. It was intended to keep overseas officers informed of the latest developments in the Bureau so that they were not completely out of touch when they returned. The newsletter included Bureau structure charts, details of significant staffing changes, changes to service conditions, legislative changes and other key events in the Bureau. It also recorded international events and connections likely to be of interest such as conferences attended, overseas visitors to Australia and training provided overseas. However the newsletter proved to be short-lived; its last edition seems to have been in December 1975.

In the mid to late 1970s and early 1980s the Bureau's international travel and postings were curtailed by a need to have all trips approved by the Department of Foreign Affairs, which seemed to operate on the basis that the number of trips should be limited. This restricted the amount of travel Bureau staff could undertake. However the Bureau continued to attend international meetings (such as the Commonwealth Conference of Statisticians and the International Statistical Institute sessions), sponsor travel to Australia by the statistical staff from developing nations, and have some staff members work overseas – albeit on a more limited basis. And for a period in the early 1980s Australia was again appointed as a member of the UN Statistical Commission, enhancing the Bureau's involvement in international activities.

An international citizen



Vietnamese delegation with ABS staff member Annette Barbetti in 1991.

The Bureau's increased role on the world statistical stage in the late 1980s and 1990s was largely due to the influence, effort and support of the recent Australian Statisticians Ian Castles and Bill McLennan, and this tradition has been carried on by the current Australian Statistician, Dennis Trewin. They have all placed great importance on interactions with Australia's near neighbours as well as the wider international community.

The Bureau's enhanced international role has been particularly significant in economic statistics. It became actively involved in the development of international standards, as well as applying these standards to its own operations.

A factor in Australia's emerging influence may have been that the Bureau was seen as providing a high quality statistical service and as a constructive player in

international statistical affairs. Visits and exchanges of staff between the Bureau and other statistical agencies have resulted in a continued exchange of ideas with other statistical communities, which have in turn enriched the Bureau's work and culture.

In 1990 the Bureau hosted the 11th Conference of Commonwealth Statisticians. The Conference was attended by 61 delegates from 36 Commonwealth countries, and included eleven observers from international organisations. While such conferences provide opportunities to promote cooperation and goodwill between the heads of statistical agencies, by this time they were also seen as an opportunity for providing assistance to developing countries. In fact the main focus of the conference had changed to reflect the interests of the developing countries of the Commonwealth. This was partly because the developed countries had other forums to discuss issues of mutual interest.

In 1992 Australia was again elected as a member of the UN Statistical Commission, after establishing a cooperative arrangement with New Zealand and Canada where membership is shared among the three countries. The Bureau continues to be an active participant in the meetings even in the years when Australia is not a formal voting member of the Commission.

Bureau staff and former staff have been prominent in many international statistical organisations over the years. However the 1990s saw the Bureau take a leading role in international statistics. Ian Castles was made President of the International Association for Official Statistics in the early 1990s. In 1992 the then Deputy Australian Statistician, Bill McLennan, was appointed as Director of the UK Central Statistical Office. After his return to the Bureau in 1995 as the new Australian Statistician, he continued as Chair of the UN Statistical Commission,

a position to which he had been elected while representing the UK, although he did not preside over a meeting of the Commission while he was Australian Statistician. Tim Skinner, later Deputy Australian Statistician, was elected as Chair of the Governing Board of the Statistical Institute of Asia and the Pacific in 1996, and remained in that position until 2000. Dennis Trewin was made President of the International Association of Survey Statisticians, as well as the President of the International Statistics Institute, from 2001 to 2003.

The Bureau's increasing international involvement eventually led to the creation of a separate International Relations Unit in the Bureau in the 1994. By the mid 1990s Australia was regularly hosting several international expert groups or subject-specific conferences each year. The Bureau also took a leading role in the 'city groups' from this period (these groups were established to assist in the development of international standards and methods in particular fields of statistics). It led and hosted the Canberra Group, concerned with developing standards for household income distribution and wealth. In 1997 the Bureau hosted a further Canberra Group on Capital Stocks. It also hosted meetings of many other city groups including the Siena Group on Social Statistics, the London Group on Environmental Accounting, and the Ottawa Group on Price Indexes.

Just to give you a few examples, one of them was done by a group called the Canberra Group, which was one of a group of what were called "City Groups", set up around the world under the auspices of the UN Stats Commission. It was an ABS initiative. We saw the need for international standards in the area of household income distribution and wealth and we led an international "City Group" to develop a conceptual framework for that ... We also made a very significant

contribution over many years in the development of labour statistics frameworks.'

Tim Skinner interviewed in 2002.

Many international agencies include seconded ABS or ex-ABS staff among their personnel, particularly the IMF and the OECD.

The Bureau has continued its commitment to providing assistance to developing countries. This has involved regularly hosting visitors and arranging for ABS staff to train the staff of other national statistical agencies. The ABS has established a policy for assisting developing countries.

'The aim of the ABS in providing assistance is to encourage developing countries to establish good statistical policies and methodologies through transfer of ABS knowledge and practical skills. The ABS does not undertake statistical work for other countries. Rather, the ABS aim is to help them to help themselves.'

ABS, 'Policy and Legislation Manual', 2003.

The Bureau holds bilateral talks with a number of agencies including New Zealand, Canada, Sweden and The Netherlands. The Bureau's commitment to international involvement continues into the new century, with Australia hosting the 2005 session of the International Statistical Institute. Hosting this conference allowed the ABS to embrace all its objectives of international involvement.

Ties with Asia and the Pacific

The ABS has a long history of working with the Asia and Pacific region. Some of the earliest work undertaken by the Bureau was in Papua New Guinea. In the 1960s, when Papua New Guinea was still a territory of Australia, it had a small statistical office. During the 1960s and 1970s the Bureau regularly sent its staff there to assist in developing new censuses and surveys. Some went for a number of short, specific purpose visits, while others served in the Papua New Guinea statistics office.

In Papua New Guinea the Bureau undertook the planning of a Survey of Indigenous Agriculture in 1961. In 1965, the Bureau was also asked to run a population census there to coincide with the 1966 Australian population census. The Papua New Guinea census was successfully developed and implemented in under 12 months including numerous field trials to determine culturally appropriate questions and methods. While Port Moresby was fully enumerated, the census was run on a sample basis in the villages (see chapter 7 for more information).

The Bureau was also an active participant in the biennial Conference of Asian Statisticians, sending an observer in 1957 and regularly attending as a member from 1958. In 1967 the Bureau hosted this conference in Sydney immediately following the International Statistical Institute session. It was the first time that the conference had been held outside Asia.

The Conference of Asian Statisticians produced the resolution which eventually led to the establishment of the Asian Statistical Institute (ASI) in 1970. Australia was



Above: Residents of a Papua New Guinean village line up to be counted as part of the Survey of Indigenous Agriculture in 1961.

the co-sponsor of the original resolution at the Conference to establish the Institute. It was established in an effort to meet the urgent demand for trained professional statisticians in the Asian region, but depended on the funding and support of UN, the Japanese government and other nations such as Australia.

In 1976 John Miller (previously acting Commonwealth Statistician) was appointed the third Director of the Institute. Under Miller it was renamed the Statistical Institute for Asia and the Pacific (SIAP). Miller retired from the position in 1985.

Others also served at ASI/SIAP over the years; some worked as lecturers and others represented Australia on the Advisory Council/Governing Board.

The first session of the UN Economic and Social Commission for Asia and the Pacific (ESCAP) Statistics Committee was held in Jakarta in November 1974. ESCAP was previously the Economic Commission for Asia and the Far East, and the Statistics Committee was previously known as the Conference of Asian Statisticians. Frank Horner represented the Bureau at the first meeting of the newly renamed committee. The Bureau continues to attend this committee; Bill McLennan, Tim Skinner and Dennis Trewin all chaired the committee in recent times. The ESCAP Committee on Statistics allows the national statistics agencies of Asia and the Pacific to share knowledge and to assist one another to improve their statistical capabilities.

Ian Jones

Ian Jones joined the Bureau in 1938 at the age of 17. In 1940 he started a degree for a Bachelor of Commerce, but he joined the Navy in 1943. After serving in World War II he returned to the Bureau and completed his degree. By 1949 he was appointed senior research officer in the Research and Analysis Branch. Within ten years he had risen to the position of Assistant Statistician and, under the direction of Archer, guided the early development and expansion of survey methodologies undertaken in the Bureau in the 1950s and 1960s. His first overseas visit was in 1962 when he attended an ECAFE seminar, and the following year he attended the fifth conference of Asian Statisticians. After this Jones attended several other sessions of the Asian Statisticians Conference and assisted in the organisation of the 8th Session in Sydney in 1967. He seems to have been one of the principal instigators of an increased focus on the Asian region which occurred in the Bureau from the 1960s onwards. Within the Bureau, Jones was made acting Deputy Commonwealth Statistician in December 1969 following Archer's stroke and O'Neill's promotion to Acting Commonwealth Statistician. During 1970 Jones also acted as Commonwealth Statistician on several occasions.

In 1968 Jones had undertaken a study for the UN into the feasibility of founding a statistical training institute for Asia. This led to the establishment of the Asian Statistical Institute in 1970. He subsequently served as an elected member of the Advisory Council of the Asian Statistical Institute while he continued as Deputy Commonwealth Statistician. However he did not serve in either capacity for long. On 10 December 1970, while attending the Conference of Asian Statisticians in Kuala Lumpur, Jones died unexpectedly of a heart attack. He was only 49 years old. His death was a huge shock to his colleagues in the Bureau.

"Those who have known and worked with him personally have lost a valued friend and colleague. The Bureau itself has lost the counsel of a statistician whose knowledge and experience will be sadly missed."

Jack O'Neill, administrative circular of the CBCS, 17 December 1970.

By the 1970s the Bureau had a strong presence in the Pacific due to the number of Bureau staff on secondment to various Pacific postings.

'We had a very strong involvement in the Pacific, even in the early 70s with guys like Ron Fergie and Laurie Lewis involved in Papua New Guinea, and there were quite a number of other people involved in providing assistance to Papua New Guinea ... John Shadlow ... Reg Gilbert and John Palmer ... we had guys like Bernie Hanslow out in what is now Vanuatu, the Condominium of the New Hebrides, Max Barton with UNDAF, Peter Hodgkinson the Statistician of the South Pacific Commission when it first started in the early 70s (when the statistics bureau started). And we have kept that involvement more or less unbroken.'

Brian Doyle, in transcript from an ABS Management Meeting at Bowral, 2000.

In the 30 year history of the South Pacific Commission (more recently known as the Secretariat of the Pacific Community), for all but six years the Statistician has been an ABS or ex-ABS staff member, with Peter Hodgkinson, Col Clements, Brian Doyle, Graeme Brown and Garth Parry all undertaking that role. In the 1970s the Bureau began to provide training courses to the South Pacific Commission for staff of official statistical agencies in the region, and from the mid 1980s it has run several courses almost every year until a few years ago, when the Secretariat of the Pacific Community acquired sufficient staff to run most of the courses itself.

Since the mid 1980s the Bureau has a strong record of providing assistance to Asia and the Pacific through bilateral programs, technical assistance programs, hosting, visiting and training programs, and providing expert contributions to workshops and seminars. It also has in place a number of memoranda of understanding with



In 1972 Bureau officer Bill McCue (front row, third from right) went to Fiji to provide training in foreign trade statistics for the staff of statistical agencies in the Pacific. Ron Fergie (front row, fourth from right) also attended the course as Papua New Guinean Statistician.

Committee on Statistics

The formal role of the ESCAP Committee on Statistics is to review and analyse programs on the development of statistics in the region, strengthening national infrastructure and promoting improvements in the quality of statistics. It does this by influencing the work programs of the key institutions that operate in the region, particularly the ESCAP Statistics Division and SIAP. It focuses on activities that enhance capability in the region including international agencies such as the World Bank and the International Monetary Fund. It also organises seminars on statistical topics of mutual interest. It has arguably been the most successful of all the United Nations committees, reflected by the large number of countries that participate (even without financial assistance) and the seniority of representatives – usually heads or deputy heads of the national statistical offices.



The Papua New Guinea Statistical Office at Konedobu in the early 1970s.

Papua New Guinea Statistician

In the 1960s and 1970s it was not uncommon for Bureau staff to be placed in positions in the Papua New Guinea office. In 1973 an Australian Bureau officer, Ron Fergie, was made Papua New Guinea Statistician. He succeeded another Bureau officer, Max Barton and in turn was succeeded by John Shadlow. At the time Fergie was a director in the Bureau but on leave without pay. He served as PNG Statistician until 1976.

Fergie recalls his time living and working in Papua New Guinea. During the time he was there, Papua New Guinea gained independence (in 1975) and Fergie became the National Statistician. He tells how the crowing of roosters and squawking of hens roaming around outside the Bureau would interrupt telephone calls from Canberra. He also remembers the snakes that would hang about to get the hens' eggs. On one occasion he got into his car on leaving work for the day, and pressed the starter button. A very angry snake 'hit the fan ... It came up from the radiator grille and slithered towards me across the bonnet. I shut my driver's window fast!'

While he was the Statistician, Fergie was also on the Electoral Boundaries Commission, and in that position he was required to attend electoral boundary meetings all around Papua New Guinea to listen to submissions on where the boundaries should go. Because he had been a pilot in the war he would sometimes take the co-pilot's seat. He recalls times when they had to land on a pocket-sized airstrip surrounded by mountains. The peaks were covered in clouds and were invisible. The pilot would find a hole in the clouds and spiral steeply into it. Ron Fergie remembers sitting nervously, unable to see anything but cloud and knowing from the charts that they were below the level of the peaks. The meetings he attended were equally daunting.

'Tribesmen would come from all around. They'd come carrying spears and ready to do battle ... they were pretty concerned about their tribe being put with that tribe.'

Ron Fergie, personal comments, 2003.



Chinese delegation and ABS executive staff in 1987.

countries to cooperate in statistical or technical fields. Bill McLennan is widely credited with the significant increase in technical cooperation with the Asia-Pacific region. This corresponded with the Australian government's increasing interest in the region. In 2003–04 the Bureau received over two hundred visitors from thirteen countries in the Asia-Pacific region that were provided with technical assistance. In the same year, the Bureau also sent staff to visit four countries from the region to provide further assistance.



1928 Conference of Statisticians, the last that included the New Zealand Statistician.

Back Row (L to R): CL Steele (Tas), LF Giblin (Tas), S Bennett (WA), Keith Archer (Tas)

Front row (L to R): WL Johnston (SA), J Porter (Qld), M Frazer (NZ), CH Wickens (Commonwealth), Thomas Waites (NSW), AM Laughton (Vic).

The relationship with New Zealand

Prior to Federation, New Zealand had attended several conferences of the colonial government statisticians. When the Bureau was first established in 1905, New Zealand continued to contribute to the network of state bureaus. It was invited to, and attended, the first Conference of Statisticians in 1906. The conference then lapsed for a time. In 1923 Wickens visited New Zealand and discussed the involvement of New Zealand in the reinstated Conference of Statisticians. From 1924 New Zealand again attended the Conference of Statisticians held every one to two years throughout the 1920s, contributing to the discussions on the statistical problems of the day. While the New Zealand Bureau made clear that New Zealand was not subject to the agreements that the states made with the Federal Bureau, it was nevertheless involved in these early attempts at statistical coordination.

'Mr Fraser (New Zealand) said it was desirable that the statistical bureaus of Australia and New Zealand should proceed along identical lines.'

'Statistical Congress', from unknown Adelaide newspaper, August 1924.

In 1929 Malcolm Fraser, then New Zealand Statistician, was unable to attend the conference due to pressing matters at home, but nevertheless arranged for the Prime Minister of New Zealand to offer New Zealand as the host of a future conference. However fate intervened in the form of the Great Depression. New Zealand was again invited but was unable to attend in 1930. In 1932 the Conference was held in Sydney, and New Zealand was not invited. It is not clear if this was merely an oversight due to the change of personnel in Canberra (Wickens had become ill and had to retire) or because it was assumed that New Zealand would not be able to come because of the Depression. It could also have been due to the

granting of autonomy to New Zealand by Britain in 1931. The New Zealand Bureau, it seems, was also not sure why it was not invited.

'Mr Fraser went – finally – in 1928, after which this contact was dropped – why I know not.'

George Wood, Progress in Official Statistics 1840-1957: A Personal History, New Zealand Department of Statistics, 1976.

Whatever the reasons, the close relationship was broken. While Australia and New Zealand continued to find much common ground when they did meet at conferences such as the British Commonwealth Conference of Statisticians, they had little contact on a bilateral basis. This situation changed little until the 1970s. In 1974 a senior New Zealand officer visited the Bureau for wide-ranging discussions. In 1986 Bill McLennan approached New Zealand and started an ongoing dialogue. In the late 1980s and early 1990s Australia and New Zealand collaborated on the development of a joint industry classification, resulting in the release of the Australia and New Zealand Standard Industry Classification (ANZSIC) in 1993. Harmonisation in a variety of other subject areas and classifications was also investigated and implemented. This work is ongoing.

From the early 1980s Australia and New Zealand exchanged staff, and this has continued. At the middle management level, staff exchanges are frequent. The present New Zealand Statistician Brian Pink is Australian, as was the recent Deputy New Zealand Statistician John Cornish. Likewise the current Australian Statistician Dennis Trewin was the Deputy New Zealand Statistician in 1990s. A number of Statistics New Zealand staff have also worked for the ABS.

Today the ABS and Statistics New Zealand cooperate in many arenas. In particular they collaborate to provide ongoing technical assistance to the Pacific region.

The relationship with Canada

As Canada was one of Australia's fellow dominions in the British Commonwealth, the Bureau always considered the Canadian Dominion Bureau of Statistics a close colleague. However, for the most part there was little to the relationship except during the Conferences of British Commonwealth Statisticians. This changed after the Second World War when Roland Wilson, then Commonwealth Statistician, worked in the UN in New York for 18 months. He saw a great deal of the Canadian Statistician Herbert Marshall, as well as other key players on the international statistical scene. He and Carver consulted heavily with Marshall on the planning of the 1951 Conference of British Commonwealth Statisticians. When Ken Foreman was sent to the US in 1952 to investigate sampling, it was arranged for him to visit Canada on several occasions. Visits continued on both sides, and in 1975 an exchange program between the ABS and Statistics Canada was established. Don Anderson was the first Bureau officer to participate, exchanging places with Keith McAlister from Statistics Canada for two years.

'As well as developing the personal statistical expertise of both officers, the exchange will also enable them to evaluate the different statistical systems and techniques used in the two countries.'

ABS, 'ABS and Statistics Canada Exchange Scheme', in *Overseas Newsletter*, Volume 2 Edition 2, June 1975.

This arrangement has continued through to today, albeit on an irregular basis.

The relationship slowed a little in the late 1970s as both Bureaus came under increasing financial and political pressures. However, when Martin Wilk became Statistician in Canada in 1982, one of his first tasks was to write to the



then Australian Statistician Roy Cameron and invite him to visit Statistics Canada. Cameron agreed to visit in the following year. Other exchanges continued, and when Ian Castles became Statistician in 1986 he also immediately arranged to visit Wilk's successor, Dr Ivan Fellegi.

'In my previous posts in our Finance and Prime Minister's Departments, I have always found contacts with Canadian counterparts to be particularly rewarding. I have therefore been very pleased to learn of the excellent relationship which obviously exists between our two organisations, and am anxious to maintain and strengthen it.'

Ian Castles as Australian Statistician in correspondence with Dr Ivan Fellegi, Chief Statistician of Canada, 6 November 1986.

In 1985 Canada proposed round table discussions with Australia and a number of other nations. Regular bilateral talks followed. Then, following bilateral meetings with

Above: Visiting Canadian delegation with ABS senior staff in the 1990s. Standing (L to R): Fred von Reibnitz, Dennis Trewin, John Carroll, George Sarossy, Tim Skinner, Bill McLennan.

Seated (L to R): Rob Edwards, Richard Barnabé (Statistics Canada) and Guy Labossière (Statistics Canada).

both Canada and New Zealand, in 1993 the Bureau initiated trilateral talks between the top executives of the ABS and the official statistical agencies of Canada and New Zealand.

In recent years the Bureau has continued to actively pursue a strong relationship with Statistics Canada, including bilateral meetings every two or three years and regular exchange of technical knowledge.



The Commonwealth Bureau of Census and Statistics tennis team, winners of the interdepartmental competition in 1936.

Front row (L to R): Ted Hicks, Keith Archer.

Back row (L to R): Frank Sayer, Chas Boag.

Opposite: Ian Castles firing the starter's gun on yet another Castle's Shield (later to become the ABS Fun Run).

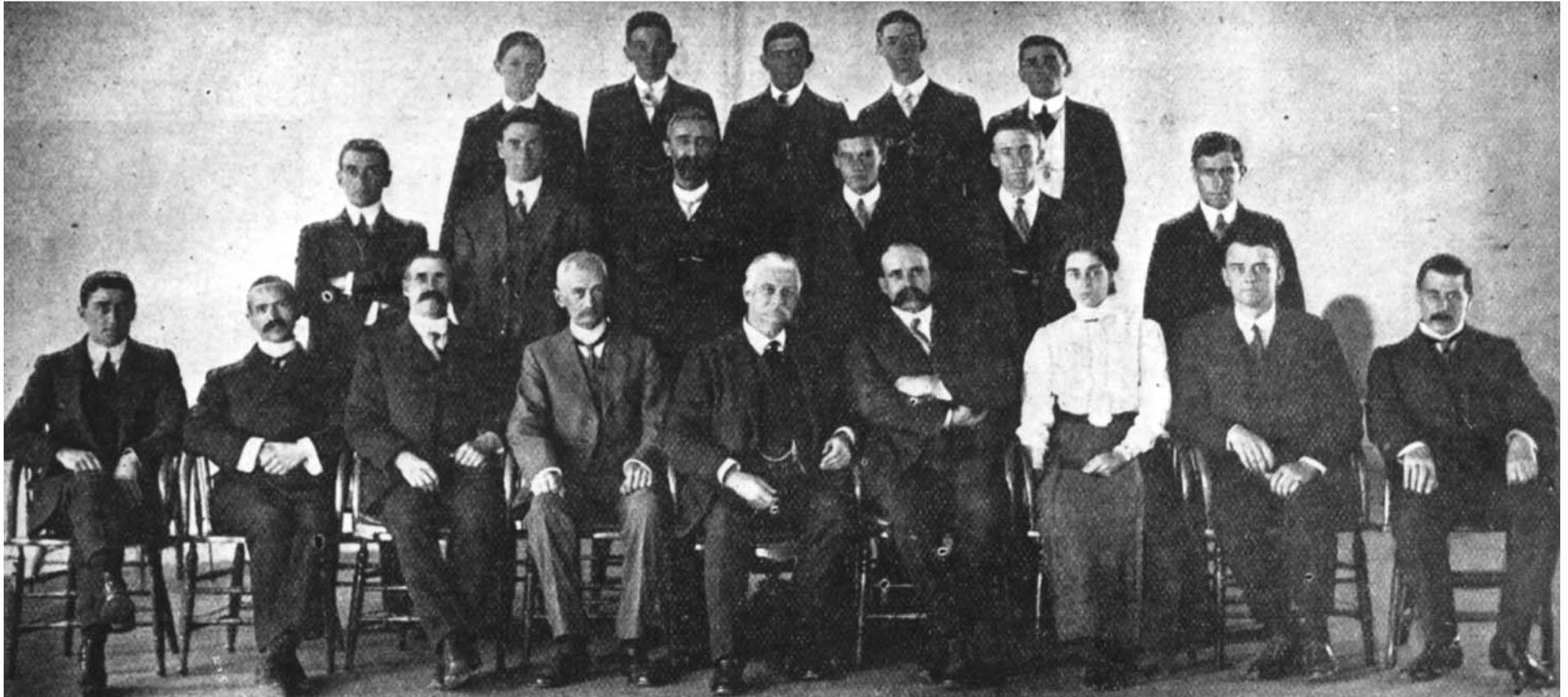
Life at work

THE CULTURE OF THE BUREAU

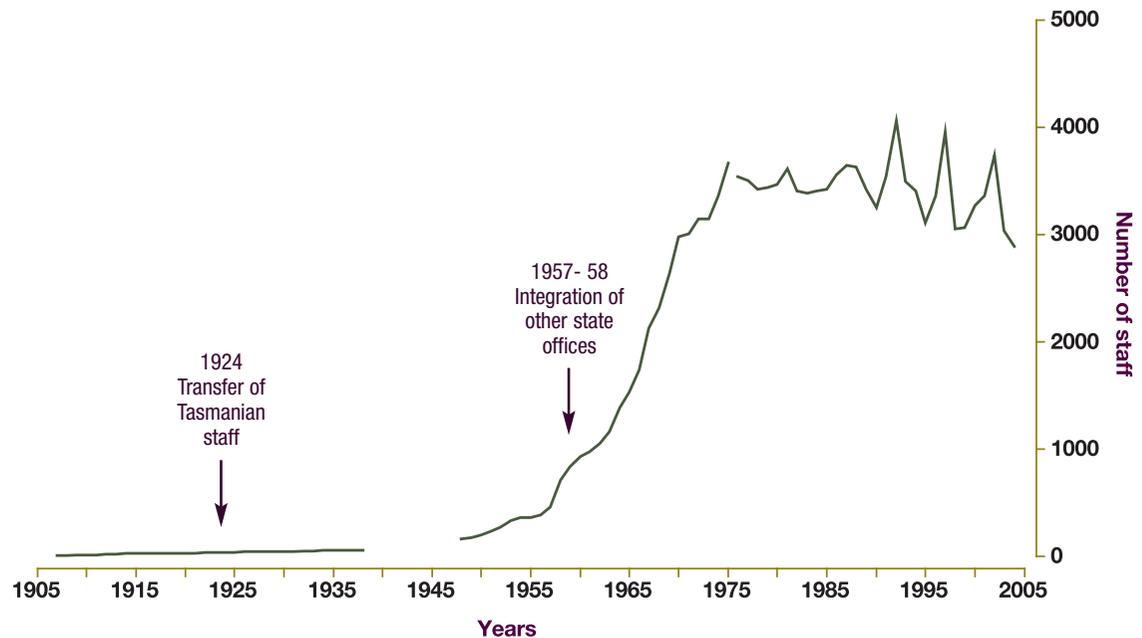
chapter eleven



CHAPTER ELEVEN



The staff of the Commonwealth Bureau of Census and Statistics in 1912.
The front row includes George Knibbs in the centre.



Available data on CBCS and ABS staff numbers throughout the history of the Bureau come from a variety of sources. The numbers shown are indicative only.

Staff of the Bureau

This chapter celebrates Bureau staff over the last century, and examines the impact that working in the Bureau has had on their lives.

Throughout the life of the Bureau its staffing levels have fluctuated, with large numbers of temporary staff employed for each population census. However there have been periods when permanent staff numbers increased quite quickly. In particular, in the years following World War II the Bureau doubled in size, then doubled again with the transfer of the state statistical bureau staff into the Commonwealth Bureau in the late 1950s. Between the end of the 1950s and the late 1970s the Bureau trebled in size. However since then its size has remained relatively stable, trending down a little in recent years. This is despite significant increases in breadth of statistical subject matter and in the range and volume of publications and other outputs.

The first staff of the Bureau

Name	Age in 1907	Appointment(a)	Previous position	Level in 1907(b)
George Handley Knibbs	49	June 1906	Superintendent of Technical Education, NSW	Commonwealth Statistician
John Stoneham	35	November 1906	Assistant Compiler, Statistician's Office, NSW	Compiler C3
Henry Spondley	53	December 1906	Clerk, Sydney Harbour Trust, NSW	Compiler C3
FD Rossiter	35	October 1906	Clerk, Govt Statist's Office, Vic.	Compiler C4.5
Edward Tannock McPhee	38	November 1906	Clerk, Statistical and Registration Dept, Tas.	Compiler C4.5
Charles Wickens	35	November 1906	Actuary and Assistant compiler, Statist's Office, WA	Compiler C4.5
JJ Byrne	39	November 1906	Clerk, Chief Secretary's Dept, Vic.	Clerk C4.3
Horrie Downing	26	March 1901	Temporary Clerk, Defence Dept, Vic.	Clerk C4.1
AG Wilkinson	25	November 1906	Clerk, Railways Dept, Tas.	Clerk C5.5
Alfred Skidmore	17	July 1903	–	Messenger

(a) First appointed to the Commonwealth Public Service. In all but two instances this was also when they were first appointed to the Commonwealth Bureau of Census and Statistics.

(b) Given the predominance of seniority as a means of promotion in that period, the level at which the staff were placed in the new statistical organisation would have reflected their length of service and seniority in their previous state departments.

Establishment and consolidation

The first Commonwealth Statistician, George Handley Knibbs, set about recruiting staff to the Bureau immediately after his appointment in June 1906. Initially there were just nine, of whom only four had previous experience working in a statistical office. Their main task was to collate data collected by the state statistical bureaus to produce totals for Australia as a whole. All of the initial staff were men.

The Bureau's office was established in Melbourne, along with the rest of the Commonwealth public service. Many of the staff were recruited from other states, moving to Melbourne from as far away as Perth. Even in this early era, many of the staff were separated from their families and friends. Peter Wickens, son of Charles Wickens who was one of the first recruits to the Bureau, remembers that the staff developed a strong bond because of this.

'The others [Bureau staff], and their families, got to know each other quite well, even in Melbourne. This may be in part the result of the numbers recruited from outside Victoria who hence had no roots in Melbourne.'

Peter Wickens, son of Charles Wickens, interviewed in 1994.

World War I seems to have had little impact on the number of staff in the Bureau, which continued to grow during that period.



Staff of the Bureau of Census and Statistics in 1918. SH Begley, HC Green, AH Lumsden, FC Russell and ER Toms were listed as still serving overseas. This photograph includes a number of temporary staff.

Back row (L to R): FW Fletcher, F Orton, H Gregg, S Morrison, WH Smith, BH Hooker, WR Mitton, H Baggs, W Campbell, RJ Dixon, FW Wilds, RW Southern.

Middle Row (L to R): V Bottomley, ABP Underwood, WG Hicks, GO Cobb, GW Fulling, LM Goldspink, AAJ Bourke, Miss AE Arnott, AA Sluce, Miss E Till, AC Mills, Miss FR Buckley, AE Callander, EJ Wolfe, AJL Butt, JF Barry, JP Dwyer.

Front row (L to R): JT Sutcliffe, HG Downing, ET McPhee, H Spondley, J Stoneham, GH Knibbs, CH Wickens, FW Barford, FD Rossiter, HJ Petrie, JJ Byrne.

Seated on ground (L to R): LS Goldsworthy, CR Porter, AE Wishart.



Charles Edward Rudolph.

Bureau staff who served in First World War

SH Begley	NK Buckman	P Clemens
HC Green	AH Lumsden	CE Rudolph
FC Russell	A Skidmore	ER Toms

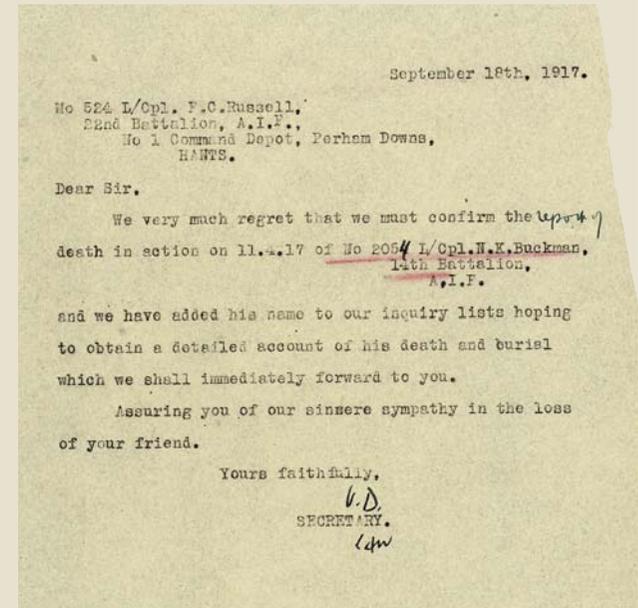
Of the staff serving in the Bureau before and during the war, nine went to serve in the armed forces in World War I. Two were killed in battle and two died of illness while serving.

Alfred Skidmore joined the Commonwealth public service at age 13 and was on the first Bureau staff list in 1907 as a messenger. He was promoted to the position of clerk in 1914 aged 24. A few days before his 26th birthday in 1916 he enlisted in the Third Divisional Signalling Company. In October 1917 he died, following an illness, in Birmingham Military Hospital in England.

Percival Clemens joined the Bureau as a clerk in 1911 aged 18. He enlisted in 1916 and died on active service in France in April 1918. Charles Edward Rudolph also joined the Bureau in 1911 aged 17. In 1915 he enlisted in the First Divisional Signalling Company. In 1917 he died in France from complications of measles.

Norman Kennett (Ken) Buckman joined the Bureau in 1913 aged 16. He was appointed as a clerk and had also been studying at university. He enlisted in 1915. In 1916 he was wounded at Pozieres, but later returned to the battlefields. In September 1917 Lance Corporal FC Russell (another Bureau staff member

serving overseas) wrote to the Australian Red Cross Society looking for information about his friend Lance Corporal Buckman. He received the following reply:



Letter for the Australian Red Cross Society to Lance Corporal FC Russell, September 1917.

In 1921 George Knibbs left the Bureau to establish the Commonwealth Institute of Science and Industry, the precursor of the Commonwealth Scientific and Industrial Research Organisation. The leadership of the Bureau was in limbo for over a year before Charles Wickens was finally selected over John Stoneham, who had been the senior Bureau officer.

After the war, only certain categories of people were offered positions in the Commonwealth public service. To fill positions in the Bureau, options were limited to juniors, returned soldiers and transferees from other departments. Sometimes it was even difficult to get suitable juniors.

The Bureau was in the Rialto building for much of its time in Melbourne, moving to the old post office 18 months or so before the move to Canberra. The Statistician's Branch was sent to Canberra as part of the second wave of departments transferring from Melbourne, and the news was met with considerable trepidation by staff.

'I suppose you have heard that the blow has fallen and that the C.B.C.S. is under marching orders. We are to go over the top on 29 June with Canberra No 2 Secretariat as the objective. This we are to be in full occupation of, by 19th July. The notice has caused general gloom in the Bureau and a few desertions, but the present is not a suitable time for any one to leave a permanent job even if its retention involves going over the top.'

Charles Wickens, letter to LF Giblin, 30 April 1928.

The date moved around a little, but in the end about 50 staff arrived between late July and early August 1928. Those who brought families mainly lived in Reid, while others had to leave their families behind and live in the Bachelors Quarters or other hostels. Hotels were used initially for the higher level staff. The female staff, who

were all single, moved into Gorman House or Beauchamp House, both of them hostels for single female public servants at that time. Soon after their arrival in Canberra, all the staff were invited to a *Conversazione* – a welcome organised by the Canberra Social Service Association at Albert Hall. This association was established to help the waves of public servants and their families as they came to settle in Canberra. At that time Canberra was a small town of a few thousand people. Coming from Melbourne, the staff must have felt they were going to the furthest frontier. John Stoneham, the Editor and second highest staff member in the Bureau in 1928, wrote in his acceptance of the invitation to the *Conversazione*:

'It is indeed a very kindly spirit to attend a welcome to the newcomers, many of whom feel like strangers in a strange land and I am sure they must all appreciate the gracious and courteous thoughtfulness which prompted you and your committee to ask us to this function.'

John Stoneham, letter to the Canberra Social Service Association, 5 September 1928.

Steady growth through depression and war

The start of the 1930s saw Wickens collapse from a stroke. Lyndhurst Giblin, previously the Tasmanian Statistician and by that time in the Ritchie Chair of Economics at the University of Melbourne, filled in as Commonwealth Statistician for 18 months until it became clear that Wickens would need to retire. In 1933 Edward Tannock McPhee, then the Tasmanian Statistician, was promoted to Commonwealth Statistician.

Giblin continued to have a significant influence on the staffing of the Bureau for the next three decades, either directly or indirectly through his protégé Roland Wilson. They planned to strengthen the economic and statistical skills and experience in the Bureau by ensuring that new staff were academically trained in economics or mathematics or both. Staff already in the Bureau were also encouraged to attend the new Canberra University College (if in Canberra) or the University of Tasmania (if in Tasmania). Bureau staff regularly applied for and received 'free places' at university offered by the public service.

By the late 1930s, the Bureau employed over 80 permanent staff. Despite the encouragement to go to university and to gain statistical skills, much of the work was still basic number crunching. The organisation was very hierarchical, and as in the rest of the public service, promotion was still based on seniority.

Sport has always played a key role in the social history of the Bureau. In the early days tennis, Aussie Rules and Rugby Union were popular. Several Bureau staff played on the Canberra University College's Rugby Union team.

Getting the right staff in the 1920s

After the Tasmanian statistical office was absorbed into the Commonwealth Bureau of Census and Statistics in 1924, the office was staffed by six permanent and two temporary officers. In the 1920s an individual agency was not able to make staff appointments. It had to request that the Public Service Board fill the position on its behalf. As the Tasmanian office was now part of the Commonwealth Bureau it had to make such requests through the Commonwealth Statistician. Since the Bureau was itself part of a larger agency (the Department of Home Affairs in the 1920s) it had to forward the request through the Secretary of the Department of Home Affairs. Sometimes this chain of responsibility made it difficult to recruit suitable staff.

In the mid 1920s Giblin (later Australia's third Commonwealth Statistician) headed the Tasmanian Branch, while the Commonwealth Statistician of the time was Charles Wickens. In April 1926 the Tasmanian Office decided that it needed a new staff member and Giblin sent the initial request to Wickens. The latter forwarded the request to the Public Service Board through the Secretary of Home Affairs. Giblin wanted a junior, a young man straight out of school or at university with good mathematical results, who could be trained to be a good statistician (basically the equivalent of a cadet today). Between April and December 1926 there were various exchanges between

those involved, including three lengthy epistles from Giblin detailing the nature of the work the junior would do and the type of employee required. Despite this, in December 1926 (eight months after the initial approach) the position was advertised without any mention of the mathematical requirements, and at a level to attract older men who had been in the public service for some years. In consultation with Giblin, Wickens put in a hurried request to the Public Service Board to readvertise the position, but to no avail. The Board was convinced that it could fulfil Giblin's requirements from the applicants it already had.

In February 1927 Giblin and Wickens were informed that the position had been filled by a returned soldier aged 32. After World War I, the Public Service gave preference to returned soldiers. While some individuals may have been very suitable for such jobs, others were not. This meant that as a group they gained a reputation of always being unsuited to the positions in which they were placed. It seems likely that Giblin would have been very disappointed with the news. Nevertheless the Tasmanian office had no choice but to accept their new recruit.



Jack O'Neill as a young man.

By November 1927 Giblin was again writing to Wickens on the matter. While the new recruit had turned out to have some abilities, they were in general administration, not statistics. Furthermore, the employee could see for himself that he was not suited to statistical work and had arranged to transfer to another department. So again Giblin asked for a new junior with mathematical aptitude. After several more exchanges, Giblin finally got the type of recruit he was after. The junior started work in the Tasmanian office in July 1928, more than two years after Giblin made the initial request. But perhaps it was worth the wait. By November the same year, the new junior was described as 'showing excellent promise'. That new recruit was John Patrick O'Neill, later to become the eighth Commonwealth Statistician.

Tennis was popular among the staff. When Frank Sayer arrived for his first day of work in 1934, he was met at the airport by Keith Archer (later to become seventh Commonwealth Statistician), taken to meet the Bureau staff, then given the afternoon off to play tennis. For several years he played in the Bureau's tennis team alongside Keith Archer. Jack O'Neill was apparently also a keen tennis player.

Aussie Rules was also a popular game as many of the staff had played it while living in Melbourne. In the 1930s the Bureau fielded a team in a local league in Canberra.

At the start of World War II, Roland Wilson, the then Statistician, was seconded to head up the new Department of Labour and National Service. Stanley Carver, then NSW Statistician, replaced him in the Bureau. Although jobs in the Statistician's Branch were classified (by the Department of Labour and National Service) as reserved occupations with the occupants exempt from military service, many of the staff still went off to the war. Many of these staff were able to join the Air Force, possibly because of their mathematical abilities which had been honed in the Bureau.

World War II had a much greater impact on the staffing of the Bureau than World War I. While the Bureau lost one-quarter of its staff during World War I, it was able to replace them and continue to grow slowly through the period. During World War II over half the men went to war. However the work of the Bureau actually grew significantly during the war. Those who remained in the Bureau had to work extra hard and were expected to do unpaid overtime on a regular basis 'for the war effort'. Men were in such short supply that the Bureau had to bring in women (even married women) as replacements. However, the women were not allowed to remain after the war and their jobs were returned to men.



Stats Tennis Team 1936, winners of the 1936 interdepartmental competition.
Clockwise (from back left): Frank Sayer, Chas Boag, Keith Archer, Ted Hicks.



Stats Football Team 1935.

Front row (L to R): unknown, Horace Downing, Reg Toms, Ted Hicks, Chas Boag, unknown, Jos Jones, Bert Loftus.

Back row (L to R): Sid Byer, Ray Gilligan, unknown, Bill Tickner, Frank Sayer, unknown, unknown, John Stephen, Fred Hill.

Starting work in the Bureau in 1936

Bill McCue started work on April 18 1936, two days after his arrival in Canberra from Sydney.

I went to the northern end of West Block, where I was found by a portly gentleman as I looked at the ground floor notice board to see where I had to go ... [Mr R] was to be my second top boss until I joined the AIF in 1941.

[Mr R] was a tyrant at work, but a friendly tyrant in many ways ... As one clerk said, "At 8.30 you balanced on the point of your pen with your tail up in the air and you stayed that way until you were told officially that it was morning tea time ... and so on through the day until 4.51 pm". Of course it was not quite as bad as that as it was necessary to descend from that position for other necessary reasons. However, one could not stargaze for long without [Mr R] wanting to know if you had run out of work.

The big boss [Mr C] was even more fearsome ... He would keep us under scrutiny over the top of his Sydney Morning Herald which he read until it was time to go see ... the Assistant Statistician, for talks which I understood at the time to have nothing to do with statistics. I came to the swift conclusion that [Mr C] did no work at all. Everyone else, including [Mr R], worked like galley slaves. It was sheer hard slog as everything was done on a manual basis and there were the overseas trade figures to get out on a strict time schedule each month ... Looking back it was probably the best place for me to start as it taught me to work hard and constantly, with a total degree of accuracy.

In 1937 the Bureau hired punch card equipment from the British Tabulating Machine Co. to process overseas trade statistics, taxation stats and vital stats ... The net result of this was that my work increased threefold as we took over the statistical work done by the Customs Department in each state ... However, machine tabulations were a far better proposition even if one had no alleviation from the transfer-of-figures grind.

In what seemed a short while I was transferred to a higher paid job with a salary range of £252–354 per year. The job entailed checking the tabulations coming off the punch card machines located on the ground floor of West Block. It was another tedious job checking ... There was no attempt made to reduce the clerical tedium, nor to provide Commonwealth based tabulations – every tabulation was on a state basis.'

Bill McCue, personal comments, 2002.

No. _____ Name *McCue, B. J.*

DEDUCTIONS :

Allotment	
Refund fare	
Miscellaneous	
Hospital Tax	<i>1/6</i>
Rent and Board	
Insurance	
Superannuation	<i>5/2</i>

*Appointment confirmed
3/11/36. Elects 2 units
Sched I Age 19.2/7 P.P.
from 6/11/36*

Amount enclosed £ *4 : 3 : 1*

4047.

Bill McCue's first payslip in 1936 after his appointment was confirmed.

Hostel life

From the moment Bureau staff were sent to Canberra, hostels became part of the culture, particularly among young recruits. Because land was not privately available in the early life of Canberra, people living there who were not married had few other options. But hostel life appears to have been pleasant enough for most people.

From the 1930s to the 1950s virtually all new arrivals to the Bureau in Canberra describe getting off the train and being met at the station by a Bureau member who would take them to a hostel to drop off their worldly goods, before taking them on to West Block to start work or at least meet other staff.

In the 1950s housing in Canberra was so difficult to obtain that people had to be engaged before they could even get their names on a two-year waiting list. The dominance of hostels as homes for young recruits continued even after the housing market was opened up, and young public servants were encouraged to use hostels well into the 1980s. The last two hostels in Canberra closed in the 1990s.

Bernie Hanslow remembers arriving in Canberra in 1952:

'On arrival I was delivered up to Reid House, which provided Army barrack-style accommodation and to reach the toilets and showers there was a long walk down draughty corridors. I took one look at this, put my gear back in the Commonwealth car and asked to be driven to West Block. Jack O'Neill arranged

for me to be relocated to Havelock House, a more substantial two-storey brick building provided with steam heating as a bonus. A little later I was to shift to Narellan House ... Life in Canberra hostels had little going for it and many Sydneysiders couldn't wait for Friday afternoon to come to escape back home for the weekend. At Christmas the only occupants left at Narellan House came from WA.'

Bernard Hanslow interviewed in 2000.



Trevor Peach (who worked in the Bureau from 1938 to 1942 and after the war from 1946 to 1949) and friends outside Barton House in 1941.

In the 1960s the Bureau's programmers in training (PITs) were housed together in hostels. This worked splendidly to build their camaraderie. Reid, Mulwala, Gowrie and Macquarie Hostels, and Havelock House, all had their share of PITs, and of the legendary PIT parties.

Staffing during Second World War

Exact numbers of Bureau staff who left the Bureau to serve in World War II are not available. However, at least 53 did serve in some capacity. This number includes staff from Tasmania and Canberra but of course excludes staff from the other state bureaus which were still independent from the commonwealth Bureau at that time. Unlike in World War I when mainly young men joined up, the age of Bureau participants in World War II ranged from 18 to 50 years. However many of the older men joined the militia and underwent training at night and on weekends, continuing in their Bureau work during the day.

Men from the Bureau joined the war throughout the period. The staff would encourage one another to join, with one man in a section joining up, then a week later a second man in the same section, then a few days later a third would enlist, also from the same area. In a few instances two men from the Bureau would join up together. For example, Peter George Faux and Eric Anton Peterson both joined the RAAF in Sydney on the eleventh day of the eleventh month in 1940, aged 22 and 23 years respectively. Faux returned from the war in May 1945, but Peterson was killed in action over Malaya in December 1941.

After the war – integration

Many Bureau staff returned after the war, and were joined by fresh recruits. In the post-war years and into the 1950s the Bureau was able to recruit staff who saw statistics as more than a job.

'I think we were all pretty committed ... and even when I left the Bureau in 1972 I still believed that it had a tremendous amount to offer the country ...

'It was partly the value of sampling to the Bureau or of mathematical techniques to the Bureau more generally ...

But it was also partly a feeling of the great value of the Bureau to the decision-making process, that generally speaking people could make better decisions if they had better facts and the facts they had were pretty pathetic quite often in those days. There was practically nothing on the social side and the economic side was pretty patchy, particularly when we came in.'

John Carroll, personal comments, 2004.

A number of people who were to have a profound impact on the Bureau joined it in this period, including Ken Foreman (who was responsible for the development of sample surveys in the Bureau) and Digby Pridmore (responsible for introducing computing).

As in the aftermath of World War I, the end of World War II resulted in an influx of returned soldiers seeking jobs. Consequently public service agencies, including the Bureau, gave priority in recruitment to returned soldiers. At the same time the Bureau was keen to employ university educated people to help transform it from a data factory into an organisation able to develop the new

statistical methods required to expand into new statistical fields and the collections for them. This led to some conflict within the Bureau as these two groups saw themselves as competing, not just for jobs but also for the direction of the Bureau. The veterans also contributed to the somewhat 'military' attitudes to hierarchies and discipline which staff recall as part of the Bureau culture even into the 1960s in some state offices.

'Desks were set out in rows, facing the front like a schoolroom, with the supervisor at the front. The only phone was on the supervisor's desk. Permission was needed to make any private calls and the supervisor generally listened to make sure they weren't too long.'

Victorian office comments on its history, 2003.

However the traditional hierarchies in the Bureau were beginning to break down (albeit slowly) after the war. Trevor Peach remembered discussing the difficulties of a homesick Canadian war-bride with the then Commonwealth Statistician Roland Wilson. Peach thought that before the war it would have been impossible for him to have had such a personal conversation with the Statistician.

From the beginning, the staff of the public service were categorised based on their experience, qualifications and seniority. From the 1922 until the 1980s the system divided staff into four divisions, with the bulk of the staff classified to Divisions III and IV.

The old public service divisions

First Division:	Permanent Heads of Departments
Second Division:	The Executive Officers, the top managers classified into levels 1–6. First Assistant Statisticians, Assistant Statisticians and Deputy Commonwealth Statisticians were all in the Second Division.
Third Division:	Professional and clerical functions ranging from a Base Grade Clerk up to Clerk Class 11. Common Bureau staff designations in this division included Clerk, Research Officer, Compiler, Programmer, Supervisor and Director.
Fourth Division:	Technical and clerical assistant functions. Common Bureau designations included Messenger, Typist, Accounting Machinist and Data Processing Operator.

Until the 1950s most male staff started in Division IV as messengers or in Division III as base grade clerks. As those above them moved up they would eventually get their turn for a promotion based on seniority. Most women started as typists or machinists and few remained for long. Most got married and were required to resign from the service. For those women who stayed, promotions were much rarer, and the highest position to which most could aspire was a supervisor of other typists or machinists. In a few rare instances prior to the introduction of cadetships, women with university qualifications were recruited straight into Division III of the Bureau.

The 1950s saw the rise of the mathematical statisticians. Ken Foreman was picked by Archer to introduce sampling to the Bureau. His early staff included Elizabeth Walls (later to become Elizabeth Hanslow), Digby Pridmore, Ken Brewer and John Carroll.

The biggest change to the Bureau came in the late 1950s with the integration of the state offices (the Tasmanian office had integrated with the Commonwealth Bureau in 1924). The main concern for staff in the integration of the state offices into the Commonwealth Bureau was to ensure that their state conditions of service would be protected, and much in the legal agreements between the Commonwealth Bureau and the states related to this. By the end of the 1950s all of the state offices had been integrated formally, but it was to take a lot longer for the state staff to feel a part of the Commonwealth.

'C Canberra was another world away in the 1950s.'

Ted Lamb, personal comments, 2003.

Women's work



Florence Paterson in 1912.

Women first began working in the Bureau as typists, machinists and tabulators. The first typist, Florence Paterson, started working permanently in the Bureau in 1911. Within two and a half years a second typist joined her, and in 1920 a machinist. By 1924 there were six permanent women staff working as typists, machinists or tabulators.



Dora Whitelaw in 1936.

Dora Whitelaw was the first woman hired by the Bureau for her academic qualifications. She was hired as Librarian in 1933 by Roland Wilson at a higher pay scale than several of the male clerical staff in the Bureau at the time. Wilson tells of how he picked her out, then managed the recruitment so that she would be the obvious candidate.

'I introduced the first female librarian into the Commonwealth Public Service ... I picked her out first, and then had to devise a set of qualifications with appropriate weighting so she'd win. Then I introduced ... the Public Service Inspector to the mysteries of weighted averages, but he forgot to ask me if I fixed the weights. She won hands down.'

Sir Roland Wilson interviewed in 1984.



Members of the Bureau typing pool in the 1930s.

Back (L to R): Win Young, Gwen Jackson, Joan Lyons, Stephanie Egan.

Front (L to R): Marcia Parbury, unknown, Mildred Tulloh.

In fact Whitelaw had a Bachelor of Arts degree from the University of Melbourne and her main qualifications were in mathematics. It seems likely that Wilson wanted her not just as a manager of the library but also for her statistical and mathematical experience. However being a female made it difficult for Wilson to employ her directly. It is not clear exactly how Wilson found out about Whitelaw, but it seems likely that, since she did some economics units, she had probably come into contact with Giblin (Wilson's mentor), who was in the Ritchie Chair of Economics at the University of Melbourne during the period she was there.

While other women began to appear in clerical and research positions after the war, they remained at a distinct disadvantage compared to their male colleagues throughout the 1950s and much of the 1960s.

Kathleen Gleeson appears to be the first woman hired by the Bureau formally for her research and statistical skills, in the early 1950s. She came to the Bureau from the Commonwealth Grants Commission and held a Bachelor of Commerce from the University of Melbourne. She worked on the Vernon Committee in the early 1960s (the Committee of Economic Enquiry, 1962–1965), and she was one of the key minds behind the development of national accounts in the Bureau. However on at least one occasion early in her career when she was recommended for higher duties by the then Acting Statistician, a Treasury official questioned her suitability.

'Will you please advise that there was no senior officer or qualified male officer capable of carrying out the duties of this position.'

Letter from a Treasury officer to Keith Archer, circa 1956.

The marriage bar, which required women to resign when they married, remained in place until 1966 in the public service, and the Bureau lost several experienced statisticians as well as numerous typists and machinists due to the bar. Others were forced by the ruling to dissemble about their marital status or simply not wear their wedding ring to work. And some made the enormously difficult decision to not marry.

While married women could not be permanent, they were able to hold temporary positions. In one instance a female supervisor of machinists resigned on marriage, but as she needed to work the best option available to her was to come back into the Bureau as a temporary machinist to be supervised by one of her own staff.

Elizabeth Walls was another woman hired in 1952 for her statistical skills. She had known Ken Foreman when they were both at the University of Sydney and had studied mathematics and statistics there. She had been working in the NSW office, and when Foreman was sent to the United States to study, she was transferred to Canberra to take his place. When he returned, the two of them set about developing sampling in the Bureau. She was his second in command. Up to that point no woman had held such high position in the Bureau and perhaps even in the public service. However in 1956 she married a fellow Bureau officer, Bernie Hanslow, and consequently was 'sacked'. Senior staff tried hard



Members of the Bureau typing pool in the 1950s.

to keep her, giving her a temporary Senior Research Officer position. While this was a demotion for her, many staff still complained bitterly about her daring to work in a clerical position once married. Eventually she and her supervisors agreed that it was too hard and, since she was already pregnant, she was finally let go at the end of 1957.

Dalma Jacobs was another of the early women in the Bureau with statistical and research skills. She began in the Bureau in 1959 straight out of school. But having won a free place at university, she was able to persuade Stan Solomon (the Queensland Statistician at the time) to allow her to study part-time while working for the Bureau full-time. She worked in the Research and Development section of the Brisbane office, part of the Bureau's new venture into surveys.

'There was a little bit of a boys' club there too in that there were many who had the view that men ... should be getting promotions and getting more money because they had a family to support. If you had four units towards your degree you would automatically get to ... the Assistant Research Officer level. That caused a bit of consternation because, of the large group that came through in [my] year ... I was the first one of that group to actually get my four units ... I immediately got promoted to this level and jumped ahead of some of them who were senior to me ... Then it seemed to me to be "open slather" and every time that I was promoted or got a temporary transfer that was appealable, I used to get the mandatory appeal based on seniority. I'll have to admit mostly I won, but in those circumstances you didn't always win.'

Dalma Jacobs interviewed in 2000.

Jacobs also recalled the difficulties when her job required that she go out to 'block list' for the development of a survey.

'I was the only female again, in that area, and they were very sceptical about letting me, a female, go out in a car all day, with ... the men doing this block listing. That was a bit of a dangerous thing to let me out unchaperoned! But eventually Stan Solomon came around and that was agreed to. But when it (the survey) went into the rural areas, where you actually had to spend a week or two ... doing the work, and you'd be out for a whole period of time, you and another male, that wasn't agreed to. So I had to actually transfer out of the Research and Development area ... Chris Christensen and I put a proposal up to Stan Solomon that we go out as a team of females together ... But they wouldn't agree to that either.'

Dalma Jacobs interviewed in 2000.

Jacobs, as with many other women, recalled that her male colleagues expected her to make the tea for them irrespective of what skills and experience she had.

Pay inequality was also an issue for women in the Bureau, as in the rest of the public service. Pay equality was achieved progressively throughout the public service between October 1969 and January 1972. Ann Bromwich, a young programmer in the early 1970s, can remember supervising a group of men who all earned more than she did.

However the Bureau was employing women in areas such as computing and sampling, and offering promotions to women, even if the public service regulations at the time required that they not be remunerated at the same level as men.

Henni Fromm joined the Bureau in March 1965 at the age of 20 and retired in 2004 from the Victorian office. Officially, she was the first woman in the Bureau to marry and not have to resign. Married on 18 December 1966, three days after the Marriage Bar was removed, she recalls checking daily on the progress of the change in regulations. Henni Fromm was also one of the first women to use maternity leave and return to work.

After the marriage bar was lifted, women were still expected to resign when they fell pregnant (although technically they could take a limited amount of unpaid maternity leave). In 1973 paid maternity leave officially became available to public servants. Annette Barbetti remembered what an issue it was at first.

I was one of the first women to go on paid maternity leave – Personnel didn't have much idea about the new procedures and my boss kept begging me to resign ("You won't be back", he said. But I was around years longer than he was).

Annette Barbetti, personal comments, 2003.

Adding to the difficulty was that while there were some childcare centres available, they did not open until 8.30 am, the time by which public servants had to be at work.

While most of the women mentioned above were unusual in their time, in that they were employed for their research or technical skills, the bulk of women in the Bureau up to the 1970s were typists, machinists or secretaries. Most accepted the conventional wisdom of the time that the roles of men and women at work were different.

The 1990s saw the establishment of a childcare facility for central office staff, with the Bureau sharing the facility with Taxation Office staff from a nearby building.

In 1992 the first International Women's Day committee was formed in central office to establish a regular event for International Women's Day. The first ABS International Women's Day event was a lunch in 1993. Since then the central office of the Bureau has celebrated the day each year with a lunch, breakfast, or in one case, a visual and performing arts fair. Various guests have spoken, including Ann Wentworth and Edna Ryan from the Women's Electoral Lobby, Judy Horacek who launched her book *Women with Altitude*, Kate Lundy and Ruth Cracknell.

The Queensland office also regularly holds an International Women's Day event.

In 1995 an all female choir was formed, *Calculating Women*, which performed at the 1996 International Women's Day Lunch in central office. The choir continues to perform at this and other Bureau events every year. *Calculating Women* also performed at the opening of ABS House in 2002.

When Barbara Dunlop acted as Australian Statistician in March 2002, it was the first time that a woman had acted in that position. Subsequently Susan Linacre has also acted in the position.

The experiences of women in the Bureau were similar to their experiences throughout the public service. While no doubt there were many men in the past who were not keen for women to work in the same jobs and under the same conditions as men, there were also many managers with foresight in the Bureau who were keen to employ qualified people irrespective of gender.



The 1955 Stats Women's Softball Team. Bureau staff continued to take a keen interest in sport throughout the 1950s. The Bureau's central office softball team was particularly well known. Most of the team were also members of the ACT representative team.

Full steam ahead

In 1959 the first cadetships were offered by the Bureau for matriculation cadets (and later also for cadets undertaking an honours year in their bachelor degree). Matriculation cadets were required to do three or four years study in a course established by the Bureau in conjunction with the Australian National University. During the university holidays they were expected to work for the Bureau. The course was pitched to meet the Bureau's need for statistically educated staff. At the time it was felt that there was no suitable statistical course of study offered at any Australian university.

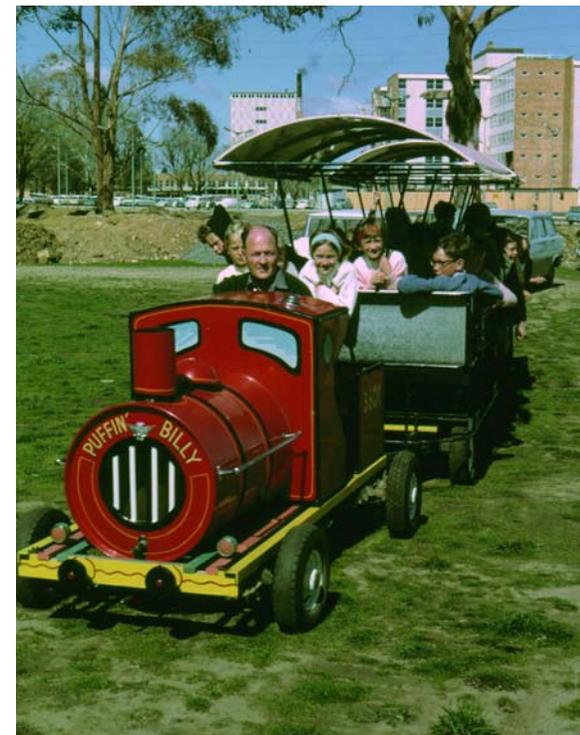
The 1960s saw a rapid increase in Bureau staff numbers. One of the key contributors was the advent of computers in the Bureau and the concurrent increase in computer technicians. By the early 1960s the Bureau was recruiting staff, particularly from the United Kingdom, who might have some aptitude, experience or training in the new computer equipment. As with the cadetship scheme, the Bureau developed its own training courses in computing. All new recruits were expected to undertake a year's training on entering the Bureau, irrespective of the relevance of their background. The programmers-in-training or PITs, along with the cadets and also graduate recruits flowing into the Bureau later in the 1960s, resulted in a drop in the average age of staff and an increase in their average education level.

The influx of young recruits, statistical cadets, programmers-in-training and (later) graduates, brought a marked social change to the staff of the Bureau. In particular, social interactions between staff out of hours became more significant, strengthened by their isolation from their families and friends interstate, and being

thrown together in hostels. Groups such as the Gentlemen's Alcohol Appreciation Society (GAAS) sprang up, which catered to their social needs informally. The GAAS seems to have been one of the first social groups to cross state boundaries; although most of the members were working in central office, the group also had a number of members in the Victorian office.

Official social clubs also started in most state offices in the 1960s with encouragement from the then Statistician Keith Archer (although the social clubs in both Victoria and Tasmania started in 1954, before integration in the case of Victoria). They were usually designated the 'Statistician's Social Club'. Activities included social evenings, balls, outings, newsletters, charity events, sporting competitions and Christmas parties. The social clubs in all offices have almost always enjoyed a high degree of support from the Statistician.

The events offered by the social clubs in their early days were products of their time. One staff member can remember attending a Prawn and Porn evening (stripper included) organised by the Social Club in Sydney in the late 1970s. In the mid 1970s the biggest event on central office's social calendar was the traditional Gundaroo Night, when buses transported Bureau staff to the village of Gundaroo near Canberra for a night of fun and celebration (and probably a lot of drinking) at the Gundaroo Hotel.



'Puffing Billy' was part of the entertainment for families at a Statistician's Social Club outing in the 1960s.

A Bureau cadet

David Leaver began his cadetship with the Bureau in the second year they were offered. He was in the same cadet year as Bill McLennan (later Australian Statistician), Chris Higgins (later the Secretary of the Treasury), Elizabeth Reid (later the women's adviser to Prime Minister Gough Whitlam), Jim Barratt, Jack Maurer, Keith Blackburn, Mike Singleton and Alan Brooks. There was also a Colombo Plan student Chirapun Bhanich-Supapol. The remaining graduates from the previous year, all of whom apparently had to repeat some subjects, joined them at the end of their first year. Because of the failure rate of the first group of cadets, the second year cadets were far more tightly controlled.

'... We were kept very much under the screws. We had to report to ... our training officer every fortnight. We had to keep diaries to indicate that we were studying at least as hard as was expected. We were also called into weekly lectures.'

There were three term vacations then. For the first they were left to their own devices, but for the next they were given the task of running a labour force survey pre-test in Canberra.

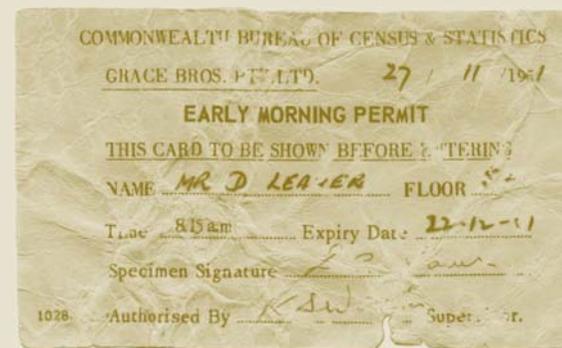
'It was decided that we ought to do something to earn our luxurious studentship, so John Carroll decided we would run a pre-test in Canberra. It was a full labour force survey questionnaire ... We did the lot, setting up interviewing, the whole deal.'

'We had to block up the area, because Canberra was much smaller than it is now. A population of about 50 000 souls in 1960, and the city boundary as defined was much closer in, but it still included the Dairy Flat area. There were a few houses out there and we blocked them up into one large block and prayed that we didn't select it – we did. John Carroll made us "earn our true sampling wings" by having to list it and then go out and interview it. Reg Gilbert listed something called the Kingston Guest House (which was the closest thing Canberra had to a doss house) as a private dwelling, which did foul up our estimates a bit.'

During other vacations the cadets were required to work in their home states. This was a particular problem in the long vacation at Christmas time.

'I think we were always a problem for the state offices, partly because ... people wanted to go on leave ... [The state offices] had these groups of people who were treated very seriously by central office; therefore they had to take [looking after the cadets] seriously. So in a sense I guess we were pretty much of a pain.'

But according to Leaver the hardest experience was in their long vacation at the end of their second year, when they were sent to work in the processing centre for the 1961 population census.



David Leaver's pass to access the Grace Bros building, used when he worked in the census processing centre for the 1961 census.

'This was in the Grace Bros building down Broadway in Sydney. The whole top floor of this building was the processing centre. Basically 500 women and us, we were the only males on the floor apart from the supervisory staff. We spent two weeks coding occupation and industry, followed by two weeks doing mark sense cards. Not to be undertaken lightly. Fortunately after that they took pity on us and we were allowed to take annual leave, then go to our state offices for the remaining part of the long vacation.'

David Leaver interviewed in 1999.

Opposite: The Bureau's first group of statistics cadets in 1959. Alan Bagnall is showing them the Bureau's state of the art mechanical tabulation equipment.





The winners of the Lancaster Cup in 1980.

Front row (kneeling, L to R): Gary Nidorfer, Steve Matheson, Phil Hughes, Keith Rust, Leon Kempen, Brian Suen, Duncan Henry, Ian (Royce) Hart.

Middle row (L to R): Max Mulready, Kris Sadkowsky, Ray Hinde, unknown (possibly Dave Ellem's younger brother), David Steel, Bob McCombe, Tom Karmel, Ray Barge, Don Young, Pierre Rey, Allan Nicholls.

Back row (L to R): Brad McDonald, Ian McRae, Geoff Lee, Dave Ellem.

In central office the social club ran the 4:51 Club, named after the official close of the working day in the Commonwealth public service until the introduction of flextime. It started up not long after staff moved into the Cameron Offices as a social facilities room became available. The 4:51 Club ran originally on Friday nights. However the introduction of flextime had a significant impact on the club, as staff started leaving early on Fridays, hence not staying for the opening of the Club at 4.51 pm. In 1978 the Club was moved to Thursday nights and its takings doubled. Most of the state offices have provided a similar service; for example the NSW Social Club has run a Friday night drinks function for a number of years.

Sport continued to remain a key element of social interaction between Bureau staff and other departments during this period in all offices. In central office, cricket, soccer and touch football replaced tennis and Aussie Rules. During the 1960s there were several 'England vs

Australia' cricket matches in central office, the result of the influx of British immigrants brought in mainly to staff the Bureau's computing services. An internal cricket competition between sections was in place for a number of years.

There was also a sporting competition within the Statistical Services Branch. It was known as the Lancaster Cup in honour of tales with which Ken Foreman would regale new recruits, of his days flying Lancaster bombers in World War II. Although the competition was often cricket, the game was apparently the choice of the previous losing team.

The 'Stats Rats' Aussie Rules football team of the Victorian office competed against other departments in Melbourne. An annual Aussie Rules match between the Victorian and South Australian offices was a keenly fought battle. The teams even played on the North Melbourne Football Club ground on one occasion.

Aussie Rules also remained the main game in Western Australia. The Perth Office won a Commonwealth government football competition in 1970, beating larger departments such as the Taxation Office and the Department of Social Security. The then Deputy Commonwealth Statistician for Western Australia, Frank Sayer, attended the final.

In 1976, central office won the B grade men's interdepartmental softball competition. In Queensland in the mid-1970s, the Bureau's women's netball team won a similar competition.

The big event in NSW was the annual Golf Day, which started in 1970. The event continues today. Golf days have been a tradition in most offices with the emphasis on participation and the most notoriety for the highest rather than the lowest score on the day.

However by the late 1970s the biggest game in the Bureau was touch football.

The passion of a generation – touch footy in the Bureau

The central office of the Bureau first started a touch football competition in 1976, not long after the sport started formally in the ACT. This seems to have been the first major lunchtime sporting competition universally popular in the Bureau; it was also popular in most state offices and with both men and women. At its peak there were three divisions in central office. First division was a male competition (although some women played in the male teams) while the second and third divisions were mixed. There was a ‘mass exodus’ at lunchtimes on the days of the competition.

The competition was tough. In particular first division was very strong and aggressive. While ‘bloodbaths’ were uncommon, a number did occur. The impact did not always end with the end of the game. Once the International Trade Section was playing the Production Staging area (which organised and prioritised computer runs). After a bloody battle International Trade won the game, but found that none of their jobs were run for a week!

Central office was fortunate to have several Australian representative touch players. Also many people played in other teams in the evenings. Sometimes teams from other Belconnen-based departments would play in the Bureau’s competition. Originally the teams were section-based, but team members were poached from other sections. One team, ‘Agtag’, was so strong that other teams were specifically put together to defeat it. One of those sides did topple it eventually, and later became so cocky that it had T-shirts printed announcing its victory in the finals ... before the grand final was played.

The touch footy competition has been described as a universal leveller, as people at all levels played. It provided a system of networking for Bureau staff who played. The present Australian Statistician Dennis Trewin played for many years, even when he was an Assistant Statistician. This did have its downside; one could be swearing and hitting an opponent on the field one day, only to find oneself being interviewed by the same person several days later! This probably helped to ensure that most players behaved reasonably well on the field.

In the 1970s the central office of the Bureau also fielded a team in the Canberra public service competition. It was so successful that it was asked to split and field two teams. That year the public service grand final was played between the two Bureau teams.

The Bureau pulled out of the public service competition in the early 1980s, but the internal competition continues today. In the early 1990s the competition was reduced to one division and by the late 1990s it had become social, with no referees. But for some the passion remains strong and they are still playing after almost 30 years.



Touch football team, the Stats Saints, winners of Public Service Touch Football Trophy in the late 1970s.

Front row (L to R): Bruce McClelland, Laurie Atkins, Brian Suen, Leigh Blyton, Phil Trickett.

Back row (L to R): Peter Crowe, Warwick Gibbons, Peter Sturgeon, Trevor Hodge, Pat Fitzgerald.

State offices of the Commonwealth Bureau prior to integration

In 1942 Syd Begley was sent to Melbourne to establish the first presence by the Commonwealth Bureau in Victoria. His job was to arrange the collection of information not then being collected by the State Statistician. By 1950 the Commonwealth office in Victoria had grown to 46 staff, with Frank Sayer as the head. Part of its role during the 1950s was to assist in the planned integration of the Commonwealth and state bureaus. In Victoria this occurred in 1958.

The New South Wales office of the Commonwealth was also established during the war. In 1949 a considerable expansion of Commonwealth staff in NSW became necessary, and by 1951 they had moved into the same building as the NSW Bureau of Statistics and Economics, and functioned under single direction. This was made possible by the unique situation of having Stanley Carver as the head of both organisations. By 1954 there were 78 Commonwealth Bureau officers located in Sydney. However, while in practice the NSW office was functioning as one office from the early 1950s, the formal integration agreements were not signed until 1957.

There were also Commonwealth Bureau staff in Queensland and in South Australia in the early 1950s.

AUSTRALIAN BUREAU OF STATISTICS
THE CARD FOR FLEXIBLE WORKING HOURS

NAME: _____ Sub-Section: _____ Accounting Period: From _____ To _____

Day No.	Morning				Afternoon				Daily Summary				Daily Credit or Debit	Cumulative Credit or Debit	Remarks and Supervisor's Init.
	(2) Start	(3) Finish	(4) Hours	(5) Offr's Init.	(6) Start	(7) Finish	(8) Hours	(9) Offr's Init.	(10) Absences to be Credited	(11) Total Hours Cr	(12) Core Time or Off	(13) + (CR) or - (DR)	(14) Hours	(15) + (CR) or - (DR) Hours	
(1)	H M	H M	H M		H M	H M	H M		Code	H M	H M	H M	H M	H M	
															← CR/DR B/F
Week 1 Sub-Totals →														← CR/DR B/F	
Week 2 Sub-Totals →														← CR/DR B/F	

Check: For each day, Col (12) - Col (14) = 7 hrs., 21 mins.

The 1970s saw a number of changes to working conditions with the introduction of paid maternity leave and part-time work to the Public Service. However the biggest change for staff was the introduction of flextime in the mid 1970s. Strict attendance hours, which were the same throughout the public service, were causing major traffic problems, and the flextime system seemed to have been an unqualified success overseas. So a trial of flextime was conducted in the Bureau in 1974 amid some trepidation that it would lead to anarchy. However:

'... the experiment subsequently proved the reservations to be misplaced and confirmed the overseas experience – in short, Flextime has been a great success.'

ABS, Flextime Evaluation Study, Flexible Hours Steering Committee, 15 August 1974.

The Bureau trial found that the only downside seemed to be the extra administration, and this was outweighed by the benefits of improved staff morale, reduction in short-term absenteeism and fewer instances of people taking one day's sick leave. In some areas it had further direct benefits of allowing increased operating hours for critical service areas. Of course flextime had great benefits for staff as well, and staff at all levels were overwhelmingly supportive of the trial.

However flextime was still viewed with suspicion by some managers. In South Australia, a number of senior managers were very nervous of it and, for the first twelve months, enforced a rule that junior staff were not allowed to work past 5 pm unless a compiler was also present.

'Presumably this was to make sure that they were actually working!'

Mike Stratton, personal comments, 2004.

Objectives of the Statistician's Social Club

'The objects of the Club shall be:

- to foster a spirit of friendship and goodwill amongst its members by arranging such social and recreational activities for members and their families as the executive and management committee may consider appropriate having regard to the general wishes of the members
- to encourage as far as possible, appropriate competitions with similar organisations
- to arrange on behalf of members for testimonials to members, and
- to raise and expend such moneys as may be necessary for the furtherance of the above objects and matters appertaining thereto.'

Extract from Constitution of the Commonwealth Statistician's Staff Social Club Melbourne, founded in October 1954.

The advent of computers brought training courses to the Bureau, as ever more staff needed to use the mainframe computers. The influx of graduates in the 1960s also resulted in a series of induction courses for graduates from 1965. Training functions were significantly upgraded in the Bureau in 1973. In addition to achieving a major expansion in statistical training, a committee reporting directly to top management began working towards the development of an overall training policy for the Bureau.

Management training courses began in the mid-1970s along with the first 'self-teaching' kits. Career planning and practical learning, through gaining experience in a variety of different areas, were also encouraged from this time.

The Bureau has also contributed to the development of statistical expertise in the Commonwealth public service. From as early as 1977, the Bureau collaborated with the Canberra College of Advanced Education to develop a Graduate Diploma in Statistics course specifically aimed at Commonwealth public servants.

Remember when ...

MEMORIES OF THE 1960S AND 1970S:

- Central office was spread all over Canberra (the Bureau occupied up to seven buildings at one time in the 1960s).
- Bureau staff had to work in offices in the dead of winter with only one wood fire to warm the entire office.
- Making a long distance (STD) phone call required the approval of a Division Head.
- In the days before photocopying, academic journals were sent to the typing pool to have multiple copies of articles manually typed out.
- Tracking down errors in a survey run involved sitting on the floor sorting Hollerith cards with a knitting needle.
- Obtaining a writing implement involved signing for a biro, then taking the empty refill back for inspection when a new one was required.
- Everyone was afraid of the supervisor of the typing pool and the photocopying attendant.
- There were frequent bomb scares at Macarthur House, which always seemed to occur on warm sunny days and often on the first day of a cricket test.

The impact of technology on Bureau office life

Adam Czapracki started work with the Tasmanian office of the Commonwealth Bureau of Census and Statistics in June 1969. He has many memories of how the technology in his office changed between then and now.

'Computers then were very new, very rare, very expensive and very big items, and the first installation in the state was certainly very newsworthy. I still remember the TV news item announcing its installation.'

The office saw very little of the new computer. It was even installed in a different building.

'But we did get to see it and kind of admire it in a non-initiated sort of way during our induction training visit.'

In the office little changed, with adding and calculating machines the highest level of technology available.

'All very mechanically complex and, if all went well, very noisy. You could always tell when a colleague was working well – by the racket set up by these machines.'

Most staff did not even have access to these machines and relied totally on pencil and paper.

'Then in late 1969, a minor technological marvel (to us) appeared, our first electronic calculator. It could not only add but do all the other mathematical functions, instantaneously, utterly noiselessly, and could display its answers as long as twelve digits. Its display was an impressive row of diodes – little light bulbs with wire filaments inside bent in such a way

that would display all numbers. Being about as big as a phone book and needing a fair bit of power to run (the diodes saw to that), portable it wasn't!

Meanwhile communications without computers were very regulated.

'There was a very strictly enforced procedure in sending out a letter, involving your supervisor, your supervisor's supervisor, the Regional Director, and of course, the typist at almost every step in between ... At worst, the whole letter had to be retyped, at best corrected by an oertype after a dab of white-out or a wave of an ink-eraser. This process was complicated by there being three copies, suitably on different coloured paper – the white original, and the yellow and pink duplicates. Getting it right so as to pass all scrutiny first time became somewhat of an art form.'

For less official communications with central office, the telex was used. It worked similarly to emails today in that it was faster than a letter but still resulted in a written record.

'You would first write your message, deliver it to the typing pool where it would be composed and sent by the operator ... and you'd wait for your response. This usually wouldn't be immediate because, well, that's life ... At the other end your message would print out and then be delivered in several stages to the addressee.'

Another task now replaced by computers is bulk mailing. This was done with the assistance of a Bradma machine.

'This was a magnificent piece of precise electro-mechanical engineering, accomplishing the dual tasks of creating the means of printing the names and addresses (embossing onto aluminium plates), and then using these plates to print the details onto forms.'

'In creating a plate, the operator would turn a dial to a spot corresponding to the appropriate letter to be set, [then] pressed a foot pedal bringing down a substantial hammer which embossed the letter onto an aluminium plate.'

'To print addresses all the aluminium plates were stacked into a hopper, with the blank forms to be addressed in their appropriate place. A flick of a switch and all would usually proceed with production-line efficiency, plates and forms feeding together. I say "usually", because sometimes things would go awry, sending plates, forms, and sometimes clerks, in all directions.'

Meanwhile use of the only computer available evolved into a series of complex routines.

'After an eyeball edit to check that fields had been filled in, a form would join others in a batch to be "punched" by "punch girls" ... There was a formal process for requesting a series of edit runs, which usually resulted in a pile of continuous

stationery appearing on your desk. If all went well this listed any records which had failed edits and the reason – all very well, but if things didn't go well you could end up with a forest's worth of continuous stationery full of gobbledegook.

'With a proper edit run your next task would be to correct the cause of the error, then to manually raise an edit form which, together with all the other corrections, would be sent to be punched, and then rerun. This cycle was repeated until you had a clean file.'

Production stagers were the people who initiated each computer run.

'It paid to get on well then (as now) with the middlemen of the system – the production stagers ... if you were on the wrong side of them ... you could find that there was no spare time available for your urgent job today.'

Production stagers disappeared by the early 1980s as staff began running their own jobs.

'It was at this time that the ubiquitous feature of virtually every office, anywhere, the computer monitor, started to appear. Just one in each section, mind you (so its use needed to be rostered amongst all staff), and connected to the mainframe (or, more accurately, a "node" of it), but now we could stage our computer runs when wanted to.'

By the late 1980s the first personal computers started to appear in the Tasmanian office.

'Soon enough we all had one on our desks (sorry – workstations), making it impossible to do any sort of meaningful work without them. Nowhere is the change more obvious than in my own field of specialty – census mapping. Just a dozen or so years ago census maps were entirely paper-based. If you wanted a map someone had to draw it. Today, of course, a few judicious mouse clicks can create a map only a cartographer could create in former days, and that's only a small fraction of what electronic mapping can really do.'

Adam Czapracki (an employee of the Hobart Office), personal comments, 2003.

The red line

One of the key aspects of working in the Bureau (and the Commonwealth public service as a whole) that really sticks in the minds of past staff was attendance. Before the introduction of flextime in 1970s, staff had to arrive at work by 8.30 am and could not leave until 4.51 pm. An attendance book had to be signed on arrival each day. At 8.30 am precisely, the supervisor would rule a line in the book, and whoever came in late had to sign under the line. At some times in some state offices the 8.30 am line was red. In other times and states the line was blue, and a further (red) line was drawn at 8.35 am.

Lateness was considered a serious offence, and repeated occurrences could result in a 'please explain', a warning, pay docked (sometimes for as little as five minutes), a fine, or even a demotion. For most staff it was an annoyance and had little relationship to the way they viewed their commitment to their jobs. However it had such a significant impact on individuals that some would ring up sick if they thought they might be a little late, in preference to signing below the red line. Many stories exist about attendance and the ways that staff got around the 'red line'.

Bill McCue, who worked in the Bureau from 1936, recalls one supervisor's insistence on sticking to 4.51 pm to the second.

'I had finished everything I had to do and the time was 4.49 pm I walked over to the hat stand (everyone wore a hat then). That voice said "Mr McCue, What time do we knock off?" I replied, "4.51 pm, Mr C". "What time is it now, Mr McCue?" "4.50 pm, Mr C". "Thank you, Mr McCue. Good afternoon".'

Bill McCue, 'A few hazy memories', 2002.

In the 1950s legend has it that Jack O'Neill regularly stood at the window of West Block in the mornings, taking note of all the staff who were running late.

In the late 1960s managers in the New South Wales office perceived a deterioration in punctuality and decided to deal more strictly with staff whose attendance had been deemed 'unsatisfactory'. This was stringently defined, over a one month period, as anyone late more than four times, late more than 30 minutes in total or late more than 10 minutes on any one day. 'Fringe' offenders (those who did not quite fit these criteria but were serial offenders) were also defined as unsatisfactory. These officers were to be interviewed by their supervisor and given an oral warning. If the offences continued in the following month they were to have the matter noted on their conduct record and reported to the Assistant Deputy Commonwealth Statistician, who would determine an appropriate disciplinary action such as a fine or deduction from pay.

In the early 1970s in Canberra, one staff member found an ingenious method of beating the red line.

'In 1972 my immediate supervisor was in the habit of lurking near the attendance book and ruling the red line as soon as I came out of the lift. So I got cunning. I used to wait till he had left, then sign on for the next day. In the morning I would come in through the Tax Office and pretend that I had just been to the ladies toilet.'

Annette Barbetti, personal comments, 2003.

In South Australia a punch clock was used.

'Every person had to punch their time card (kept in a special rack on the wall by the time clock) with the time that they had arrived by. If a person had a time more than 8.30 am then that person would have to report to the Administration Manager and explain why they were late (over the red line). At the conclusion of the day everyone lined up at the clock and the first person could not punch their card until the clock had clicked over to 4.51 pm. I always found that it was impossible to beat [a colleague] to the machine. He used to line up about 15 minutes before 4.51! On one occasion when a young woman was leaving the ABS she posted all the cards down a disused mail chute and so no one had a card to punch when it was going home time.'

Mike Prisk, personal comments, 2003.

Not only were the beginning and end of the working day strictly controlled, but also the lunch break was to be taken from 12.30 to 1.30 pm exactly. In South Australia the whole office was closed with no one available even to answer phones. But everyone had to be back by 1.30 pm.

'There were several doors leading from the outside corridor to the office and [a senior manager] used to lock all these from the inside, except for the one near his office. Any late comers then had to pass by his door and offer an explanation as to why they were late.'

Mike Stratton, personal comments, 2004.

A time of change

Following the gains in working conditions in the 1970s, the 1980s were a time when many of the hierarchical patterns and rules of the past were put aside throughout the Commonwealth public service. For example, from 1984 seniority was officially no longer relevant in the promotion process.

The roles of staff in the Bureau were changing too. The 1980s saw the Bureau pull out of the compilation of most administrative data sets. The state offices in particular had previously done a lot of this work, which was often monotonous and boring. At the same time social surveys were becoming far more significant in the Bureau. Social and demographic statistics areas grew strongly in the 1980s, and staff with demographic or social research backgrounds were being encouraged to join the Bureau.

Office restructuring in the late 1980s changed roles even further as the old divisions of staff were replaced with a single integrated structure. 'Pools' of typing and data entry staff were integrated into general clerical positions. Multi-skilling was the new buzzword, and all clerical staff had to learn to type and do their own calculations and data entry. Other concepts, particularly industrial democracy, occupational health and safety, and equal employment opportunity (EEO), were related to the office restructuring and also had a significant impact on changes to work in this era.

The *Public Service Reform Act 1984* required agencies to develop EEO programs, and the Bureau's first program was released in 1987. It included a short list of prior EEO initiatives including the employment of the first Indigenous staff in 1979, under the 'National Employment Strategy for Aboriginals' scheme.

The Bureau's Industrial Democracy Plan, also released in 1987, aimed to encourage staff to become more involved in the decision-making processes, to allow them to share in the privileges and the responsibilities of managing the work.

'The ABS believes that encouraging all staff to participate in decision-making on all matters that affect their working lives will lead to better informed decision-making, improved staff morale and greater commitment from staff. It will also generally enrich the working lives of staff at all levels within the ABS.'

ABS, Industrial Democracy Plan, 1987.

Sport in the Bureau in the late 1980s moved to focus on running, with several major events established particularly under the encouragement of the then Statistician Ian Castles. From the mid 1980s the Bureau sent a team to participate in the Department of Finance's Post-Budget Fun Run. In 1988 the Bureau team won the cup. In 1990 the Castles Shield was established. It was a 7.3 km race around Lake Ginninderra, and agencies and companies all over Canberra sent teams to participate. The race continues to be an annual event and is now known as the ABS Fun Run.

The Lake Ginninderra Handicap, a seven kilometre foot race organised for the last Tuesday of each month, was established in 1983. The event raises money for the ACT Cancer Council. This race is still run monthly and recently celebrated its 20th anniversary. It is run as a handicap race based on the runner's previous best time.

The tea ladies

Tea ladies were an institution in all offices of the Bureau. They provided a welcome ten minute distraction from the grind of work in the mornings and afternoons. They also carried with them the latest news and gossip.

In Tasmania the tea lady was remembered as a regular arrival every day at 10 am and 3 pm during the 1970s.

'The rattle of the cups on the trolley was the time to stop keying and line up for either tea or coffee. That was until someone noticed the tea leaves were contained in a homemade teabag made from a stocking. No one was sure if the stocking was new or used, and there was a rapid decline in the number of tea drinkers.'

Gaelene Spence, personal comments, 2003.

Tea ladies started at different times in different offices, but were around in most offices from at least the 1950s to the 1970s. Early in 1975 in central office there were six tea ladies working in the Treasury Building, four in Macarthur House and three in the partly occupied Cameron Offices. However by the time the entire office moved into Cameron late in 1975, vending machines were installed and the tea ladies were offered clerical jobs.

In at least some of the state offices, tea ladies lasted another decade or so. But by 1989 the South Australian tea ladies were packing up the cups and saucers. In New South Wales the tea ladies lasted a little longer by providing a commercial tea-to-desk service after the subsidised service was discontinued in 1988. But by 1990 this too had folded.

Foster parents

In October 1971 the then Sampling and Methodology Branch of the Bureau sent a letter to the charity Foster Parent Plan, asking if as a group it could support one or two underprivileged children. While many workgroups in the Bureau have done this over the years, this group continues to support children today. It is possibly the longest running continuous commitment by any public service staff group in Australia.

It started with one child from Indonesia, but within a year its contributions had grown so much that it could support a second child from Vietnam. Like many who sponsored children in the 1970s they were saddened, at the conclusion of the Vietnam War, to lose touch with that child as Vietnam was closed off to support groups.

'It is now quite clear that the PLAN programme in Vietnam has come to an end. After 18 years we can work there no longer. Indeed, we are even unable to obtain any information about the families and communities which you and the other Foster Parents were assisting and for those [with] whose welfare and progress you were all so vitally concerned. This, I know, will grieve you deeply. Believe me, my staff and I share your grief to the full.'

Letter from John L. Collier, National Director of the Foster Parents Plan of Australia, 24 July 1975.

The group continued to support children from Indonesia and also went on to support children from Korea, the Philippines, Mali, Burkina Faso, Columbia, Sudan and India. It has sponsored up to four children at a time.

This group not only sent money to the children it supported; its members also took turns in writing to the children.

In 1994 the Sampling and Methodology Branch received a gift of an axe and a hand woven bag from villagers in Burkina Faso in West Africa as thanks for the years of support.

Today the group (now the Methodology Division) still supports three children. It has made a difference to the lives of 17 children and their families over the past 34 years.

This is just one example of many groups in the Bureau who contribute with their work colleagues in organising events or providing other support to a range of charities.



Some of the children whom the Sampling and Methodology Branch has assisted over more than thirty years.

Bureau staff Australia-wide have been competing in local 'Corporate Cup' events. The New South Wales Office has competed in every series since the foundation of that state's cup in Sydney in 1988, and has won on three occasions. Several staff who ran in the first series still compete today.

In Queensland in the 1980s and 1990s the office competed against the Queensland government's Office of Economic and Statistical Research in various sporting competitions. Since 2000 these competitions were for the Ossie May Shield (May had been the head of both organisations). Competition areas have included cricket, netball, lawn bowls and even debating.

Working in the data prep pool

'In the mid seventies I was a new starter in the Tasmanian office DPO [data preparation] pool. On my first day I was taken into the DPO pool and introduced to around twelve ladies including the Supervisor ...

'It was not uncommon to spend days knitting, reading or playing cards. This would happen when the system was down or when work ran out. It was up to the Director to decide if we could go home for the day. At this time there was no multi-skilling; DPOs were just DPOs and only keyed data.

'At one time the pool grew to around 18 ladies, affectionately known as "tarts". The only problem with having this number of operators was there weren't enough keyboards for them all to use at one time. The solution was to take it in turns at having a day off the keyboards where we could read or do something quietly but had to be ready to do card punch if required ... There were two phones in the Data Entry Pool, one on the supervisor's desk and the other on top of a filing cabinet. You had to ask permission to use the phone.

'It was around this time that monitoring of operators' statistics started to occur, and speed ruled. The faster we keyed the better it was. Reports were given to us on the number of keystrokes we'd each keyed per hour, with some special comment about who was the fastest. RSI/OOS wasn't heard of in these days. The shoulders hurt and even burnt at times but this was just part of the job. The emphasis on speed did change over time and accuracy became more important. Errors were then recorded for each operator.

'When the Tea Lady was sick, Data Entry staff had to take on extra duties and do the morning and afternoon tea run. Smoking was acceptable anywhere in the office. Those who smoked didn't have to leave their desks as ashtrays were provided.

'The numbers in the DPO pool did reduce by some leaving to start families and some even transferred into clerical areas. The equipment was upgraded and we were now able to write the programs for some of the local applications. Occasionally we still ran out of work and did our knitting; on one occasion a boss brought in videos for us to watch. The days of being sent home were over, we had to stay till our 7.21 was up and couldn't make up time when there was no work. RSI was now becoming a problem and the whole DPO pool were required to have a 10 minute break every 50 minutes. This was to include exercises twice a day. Any intruders into the DPO pool had to either join in the exercises or leave; watching was not an option.

'A radio playing in the Data Entry Pool was the norm until the ABS provided Walkmans for all DPO staff. Rechargeable batteries and a battery charger were also provided ...

'With the introduction of multi-skilling and depooling things changed. The "old tarts" still have lunch occasionally and we love to reminisce about the "good old days" when we had time to laugh and time to really enjoy ourselves at work.'

Gaelene Spence (an employee of the Hobart Office), personal comments, 2003.

Statisticians' Social and Sporting Carnival

In the early 1960s the Assistant Deputy Commonwealth Statistician in Victoria (Reg Spencer) and the Deputy Commonwealth Statistician of Adelaide (Peter Hodgkinson) decided to foster closer ties between the two state offices by holding a sports carnival. In 1962 the two offices held the first of ten annual social and sporting weekends, involving teams from each state competing in various sports. It was held over the Queen's Birthday weekend in June, and in the following years the host alternated between the two capital cities.

The then Commonwealth Statistician Keith Archer heard about the idea. He saw that it had the potential to improve the integration of all the state offices with the central office, so he arranged for the first Australia-wide Statistician's Social and Sporting Carnival (SOCSP0) in Canberra in 1969. Since then twelve SOCSP0 events have been held. They are currently held every three years.

'The aims of SOCSP0 are to generate good will and understanding between the various offices of the ABS through personal contact in the informal environment of a carnival involving social and sporting activities.'

'SOCSP0 general guidelines', 1984.

Each SOCSP0 consists of a week of sporting competitions, tourist outings, parties and games. The mantle of host moves from state to state and even New Zealand. SOCSP0 is still seen as playing a critical role in helping staff in different locations to get to know and understand each other better.

Enthusiasm for SOCSP0 peaked in the early 1990s. Lately there have been some concerns about future generations with the average age of SOCSP0 participants increasing with each event. In recent years extra effort has been put into encouraging younger staff to participate.

Functions offered by SOCSP0 have varied over the years. A hayride was one of the events at the 1969 Canberra carnival. The 1971 SOCSP0 at the Gold Coast included a Hawaiian Luau. The 1969 and 1971 carnivals both included a 'Miss Stats' competition complete with bikini parade. Beer and wine tastings were very popular events at the early SOCSP0s and the 1975 SOCSP0 in Adelaide included a pub-crawl.

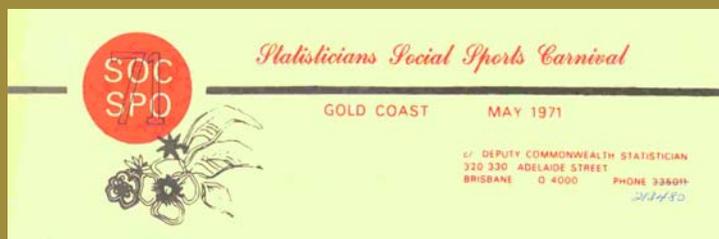
However in more recent times there has been a move away from an emphasis on drinking as the age of participants increased. By the 1980s family events were often added to the SOCSP0 program, and in the 1990s specific children's events were included. In general entire families were encouraged to participate.



Another successful fundraiser for SOCSP0 has been selling wine. These are the wine labels for the 1975 SOCSP0 held in Adelaide.

Among the key fund raisers used to assist the organisation of the carnival have been the 'Silver Circles', raffles where half the set amount goes to fund prizes for draws for 10 weeks. Originally these were run on an ad hoc basis, but since the late 1980s the final draw has been attached to the Melbourne Cup each year.

A SOCSP0 Carnival was held in Adelaide in April 2005 with a special centenary theme.



ABS staff at the 'Hawaiian Luau', 1971 SOC SPO on the Gold Coast (L to R): Geoff Winter, Erik Asmus, Tony Carr, Garry Carlton and Alan Harvey.

PARTICIPANTS (ABS STAFF AND THEIR FAMILIES) BY STATE

Year	Location	NSW	Vic.	Qld	WA	SA	Tas.	NT	ACT	NZ	Total
1969	Canberra	53	49	35	25	31	13	0	202	0	408
1971	Gold Coast	47	57	86	16	34	21	0	64	0	325
1975	Adelaide	23	57	62	23	123	20	1	56	0	365
1979	Perth	21	17	41	144	65	20	0	28	0	336
1985	Hobart	38	39	27	30	69	128	3	84	0	418
1988	Sydney	160	30	34	15	65	32	12	61	0	409
1990	Alice Springs	75	44	43	20	141	15	70	121	0	529
1993	Melbourne	70	283	38	36	75	25	24	175	10	736
1996	Christchurch	n.a.	550								
1999	Maroochydore	52	38	104	19	27	24	13	113	95	485
2002	Perth	24	30	21	114	32	23	5	61	68	378
2005	Adelaide	37	23	45	21	251	9	0	163	107	656



John Pollard (Director, Economic Statistics), Chris Turner (Manager PSO), Clive Anning (PSO staff member) and Frank McCallum (Assistant Director Economic Statistics). McCallum is pointing to the location of his ordeal on a map of Tasmania. Bill Trethewie, who was also navigating in the search plane, was absent when the photograph was taken.

The Bureau to the rescue

One Friday in March of 1992, Frank McCallum (a member of the Tasmanian office of the Bureau) left in his four wheel drive to cut wood for his winter supplies. He set off from his hobby farm in the Nugent area of South Eastern Tasmania. When McCallum failed to return by nightfall his worried family contacted the police and a search commenced. The following Monday McCallum's family also notified the Bureau that he would not be at work that day because he was still missing.

On that Monday the Bureau had arranged a charter plane to take Bureau staff to do some aerial counting of houses for population survey purposes. PSO Manager Chris Turner convinced the Economic Statistics Director John Pollard that they should leave the aerial counting for another day and search for McCallum instead. Luckily the pilot of the chartered

Cessna 172 was experienced in search procedures. The pilot, along with ABS staff Clive Anning and Bill Trethewie, searched for three hours. On their last pass over the search area, and in failing light, they spotted the missing 4WD. It was 500 metres from the nearest track.

After circling for a few minutes, searching for any sign of McCallum, they plotted their position and flew back to the local airport. They met up with a police search team at the airport, then flew back to the 4WD and directed the rescue team in. The terrain was very rugged and the police ground team had difficulty locating the vehicle. They had to be talked in to a distance of about 50 metres.

Finally the search team located McCallum down a bank. He was in a very bad condition. He had fallen on the Friday morning and dislocated a disc in his back. The cuts and abrasions he received in the fall had become fly blown during his four days of lying immobile and he was badly dehydrated. He lost 17 kilos during his ordeal. And on his last night in the bush a number of Tasmanian Devils had gathered around him, no doubt eyeing him with great interest. McCallum was found just in time – in all likelihood he would not have survived the night.

McCallum spent seven days in hospital but was eventually able to return to work in the Bureau. He remained in the Bureau until his retirement in 1997.



The Social Club in central office currently organises a themed ball on an annual basis. The first was a masquerade ball in 2003.

Recent times

As indicated earlier, over the last decade or so the Bureau has changed little in size. However structures of work have changed significantly. In the early 1990s National Project Centres were established for each subject area, replacing the old structure where, for most areas of statistical subject matter, a work group in central office existed also in each state office. Rather than each state office collecting the data for all subject areas for its state, National Project Centres were placed in various states and in central office, and they collected all the information on their subject area irrespective of the state in which the respondent was located. More recently, changes have been made to concentrate in one office the responsibility for various statistical operations on behalf of a number of collections, allowing staff to become specialists in statistical operations or statistical subject matter.

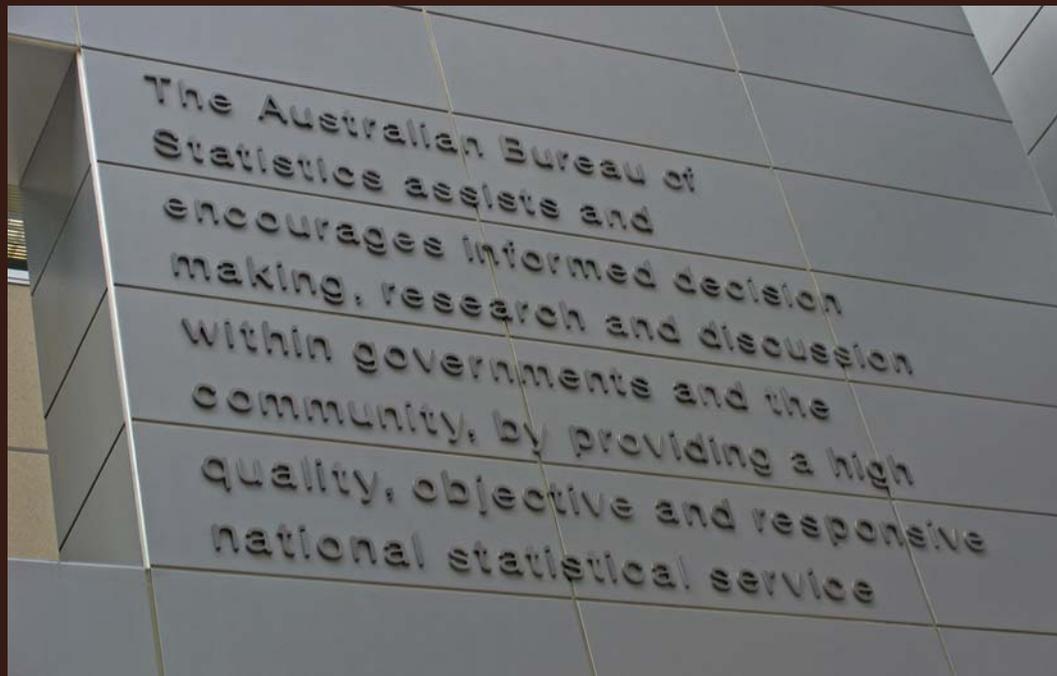
The Social Clubs in each office continue to flourish and organise major events including the office Christmas party and a Christmas party for the children of staff. They continue to be the hub of social activity among staff.

In central office, staff moved into a new, purpose-built building in 2002. The move to ABS House was a major milestone with a significant impact on the professional image of the organisation.

Working in the Bureau provides an experience different from working in most other government departments or agencies, primarily because of the independence of the Australian Statistician from political interference. For many staff, both past and present, this was significant in their decision to come to the Bureau or to remain in it.

‘The thing I liked about it most was that you were not expected to bum around Parliament House and say “Yes Minister”, “No Minister” and so on ... even the outside Statisticians who came from Treasury, they became their own man when they were given that Statistician’s job, and they were as prepared to tell Treasury or whatever to “go, hop it” as anybody else was. That was the big thing of working in the Bureau. I would never have left it and gone to a policy department (probably none would have me) because you could be objective with some prospect of having the objective view accepted, and with rare exceptions you were not expected to toe a line.’

Col Clements interviewed in 2000.



The ABS mission statement on the wall of the atrium of ABS house.

A vision for the future
CONCLUSION

chapter twelve



CHAPTER TWELVE



A vision for the future

The path to 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 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 of the Bureau to the values of integrity, professionalism, equality of access, and protection of the confidentiality of information provided to the Bureau by individuals and organisations.

Opposite: Dennis Trewin, Australian Statistician since 2000, began his career in the Bureau as a Statistics honours cadet in 1966.

Our forefathers have created an excellent legacy and foundation for our future development. This is important as, like 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.

Bill McLennan, in his article in the 2001 Year Book, articulated a number of important challenges for the future. He concluded:

'The basic role of the ABS is unlikely to change, although how it does things and what it does may change significantly.'

Bill McLennan, 'The development of official statistics in Australia, and some possible future challenges' in *ABS, Year Book Australia*, No. 83, 2001.

The rest of this chapter 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.

The ABS as statistics provider

The core role for the ABS will of course 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 and that they will be of 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 appropriately. Among other things, the demand for more timely and more detailed statistics is continuing.

It would be foolhardy to try to predict future changes in statistical themes, but they are likely to be substantial. If you look back 15 years, the ABS did not produce state accounts, environment statistics, statistics about most service industries (the only service industries covered were retail and wholesale trade), information technology statistics, statistics about cultural and recreational activities, or statistics about Indigenous people (except for a few items in the population census). This is a small sample of the many changes in the statistical program over that time. More changes can be expected in the future, many of which will pose particular measurement challenges.

Producing statistics about a topic involves many facets. In particular, for the statistics to be meaningful it is necessary to work closely with their users, especially the policy analysts, to better understand the underlying issues. Only then can appropriate statistical frameworks be developed to give context to the statistics and help to make them relatable to others. Such frameworks should not be developed in isolation. Where possible, they should be related to existing international frameworks



ABS graduates of a Graduate Certificate in Management, University of Canberra, hang onto their hats outside Parliament House.

such as the System of National Accounts. Our colleagues in other national statistical offices are often confronting similar problems. Collaboration with them is important, not just to share knowledge, but to facilitate the comparison of data across countries.

There will be changes in the way the ABS collects data. Until the 1950s most statistics were collected through censuses or from administrative systems such as the Customs system for international trade data or the registration systems to capture births, deaths and marriages data. Sample surveys, introduced midway through the last century, have led to an incredible increase in the amount of statistical information available, particularly on social topics. While sample surveys will continue to be the main source for official statistics, data from administrative systems are making something of a comeback as a source for statistics. They have always been used extensively in the Scandinavian countries, which have a rich history of registers of various forms.

In Australia, because of the evolution of computer technology, data from a range of administrative and transactional databases are now more readily available. In the past the ABS would normally have been expected to produce official statistics based on those systems, but this is no longer the case – administering agencies are often best placed to compile the statistics themselves, but the ABS can provide a useful leadership and support role in several ways. This is discussed further in the following section.

Another method for compiling official statistics is likely to increase in prominence – the use of analytical or model-based methods. A number of innovative statistics have been produced in recent years using these methods, such as small area disability statistics, estimates of human capital, and wealth distribution statistics. These 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. It is also important to be able to describe data quality in a meaningful way. Subject to these preconditions, there is no reason why analytical methods should not become more prominent in the production of the official statistics.

There is another likely change. What is increasingly possible is the ability to link datasets to make them much richer for statistical purposes. One such example is the linking of successive population censuses to provide a longitudinal data file which will be a rich source for medical research, lifecycle analysis and so forth. Our sister agencies in many other countries have started down this path of using linked data sets for statistical purposes. We have been more careful. There are privacy issues that need to be carefully managed. We would not do anything that would threaten the confidentiality of those who provided the data, nor are we allowed to by law. Also, we do not want to go further than what the Australian public regards as reasonable. But the potential benefits are significant, so linked datasets are certainly a development worth pursuing.

The other big change in data collection will be the use of the Internet. Over the last 20 years, technology has changed the way in which data are collected and captured. Some of the more prominent developments have been Computer Assisted Telephone Interviewing (CATT) for the monthly retail survey, Computer Assisted Personal Interviewing (CAPI) for the monthly labour force survey and a range of social surveys, Optical Mark Reading (OMR) for population surveys and Intelligent Character Recognition (ICR) for the processing of the population

census. An e-form is being designed for the 2006 population census. The take-up rate is expected to be about 10%, but this will surely increase over time. Businesses are more interested in reporting over the Internet, especially if statistical returns can be automatically extracted from their own accounting systems. Languages such as XML make this increasingly feasible. Some national statistical agencies are examining these possibilities aggressively; we will watch these developments with interest, and pursue them at the appropriate stage.

Technology has facilitated continued improvement in the quality and efficiency of statistical processing. This will continue to be the case. We are increasingly moving to a single architecture across Bureau computer systems for the collection and processing of statistical collections. Among other benefits this will make technological change much easier to manage.

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, accessing our web site is how most statistical users obtain ABS data. 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 important 'self help' initiative 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. The use of these remote access

facilities, and the types of services that are available, will continue to grow and enable much better access to detail for our more sophisticated users.

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. While our legislation sets limits on disclosure, it may not always be sensible to go to the limits it allows. This is an issue being debated internationally by national statistical offices, and the ABS has taken a leadership role in trying to get to an agreed position. More sophisticated ways of supporting the research community can be expected.

Statistical users are also looking for increasing detail (though not microdata) to support regional analysis, industry studies and the like. The ABS will take advantage of automated geocoding facilities to support the need for finer levels of geographical data. This is one of the reasons we have introduced the 'mesh block' as the finest level geographical unit for outputs from the 2006 population census. It is a much smaller building block than a census Collector's District, so provides users with greater flexibility in defining their own areas. This provides a number of challenges, the protection of microdata being paramount.

Increasingly we find that users want to compare statistics for Australia with those of other countries, to provide a context for Australian figures. Inter-country differences can often be very illuminating in evaluating the effectiveness of current policy or for assessing alternative policy options. This is one of the main reasons why



The ABS produced Discover the ABS in 2004 as a general introductory guide to the services that the ABS can provide.

the ABS is an active contributor to official statistics internationally. To quote from the Corporate Plan, the ABS follows a strategy of:

'Increasing the availability of comparable statistical data with other countries through:

- *leadership and support in the development of international statistical standards where they are important to us and where we have a position of influence; and*
- *expanding international data available in our publications and other statistical services.'*

ABS, *Corporate Plan*, 2000.

International comparability of economic statistics is relatively well developed. Moves are now afoot to do more for the comparability of social statistics. The approach may be different – international surveys are likely to be a key source of internationally comparable data for social statistics.

Given the growing importance of international comparability, it is arguable whether the international statistical system is sufficiently well set up to play a leadership role. The OECD provides an excellent range of comparable data for member countries (and increasingly other large countries). The United Nations Statistical Office produces useful data on international trade and population. Also, the mechanisms for setting new international standards for economic statistics have worked reasonably well. But there are some doubts as to whether the international statistical system in its current state has the ability to play a more expansionary role.

'In my view the international scene is not in good shape at the moment and would not be capable of facing such challenges, being at its best chaotic and at its worst very ineffective ...

Unfortunately the statisticians of the countries of the world have not played an important enough role in the management and development of international statistics policy.'

Bill McLennan, 'The development of official statistics in Australia, and some possible future challenges' in *Year Book Australia*, No. 83, 2001.

Undoubtedly changes will be needed in the future if the international statistical system is to be as effective as it needs to be. The national statistical offices have always cooperated with each other and with international bodies in the development of frameworks, standards and systems. But there are now clear signs of increasing cooperation among the international agencies. The United Nations Statistical Commission needs to play a leadership role in the management and development of international statistical policy.

The ABS as statistical leader

The ABS has a responsibility for the coordination of official statistics. The functions of the Bureau set out in Section 6(1) of the *Australian Bureau of Statistics Act 1975* (Cwlth) include:

- (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’.

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. The need for the ABS to take a leadership role is becoming clearer and is likely to become more so in the future. Not surprisingly, this has become more apparent at the same time as the amount of statistical activity outside the ABS has increased. There are other providers of sample survey services, which are used from time to

time by government agencies. But most importantly, many Commonwealth and state government agencies are custodians of administrative data which are potentially a very valuable source of statistics. Australia is evolving towards a National Statistical Service in which the ABS is only one of the providers, albeit a very important one.

There is support for the ABS taking a leadership role in the development of national statistics. Why is this the case?

- Government agencies increasingly need to work in a ‘connected’ way. This will only happen if they are prepared to share information, including statistical information.
- It is important that this information can be related – for this we need to be using the same concepts and definitions to the extent possible. This requires leadership on standards and classifications, a role which the ABS is well suited to play.
- It is important that the range of statistics be of good quality – sound statistical methods should be used. Again the ABS has a constructive role to play.

What is meant by statistical leadership? One way to illustrate this is to summarise the types of activities that might be pursued. They could include:

- Developing standard classifications (for example, an industry classification) and making them available to other providers of statistics. Additional support could be provided through training, coding manuals, software systems to support coding, and so on.
- Developing and promulgating statistical frameworks, standards and definitions for use by all providers of statistics. Publications of modules of standard questions on particular topics (for example, on employment) can help improve coherence across different sources of related information.



Banners celebrating the centenary of the ABS hung in the atrium of ABS House for the whole of 2005. The centenary year included a number of celebratory events such as hosting the 55th session of the International Statistics Institute, an ABS Centenary Ball and the release of this history.

These frameworks should be based on international frameworks where they exist.

- Disseminating manuals of good practice and providing training programs to support them. More generally, providing good guidance on other aspects of statistical production.
- Maintaining active networks among the key personnel involved in statistical activities through newsletters, seminars, social gatherings, and so on.
- Developing agreed protocols for the National Statistical System.
- Developing metadata standards for describing collections, particularly the quality of the statistics derived from these collections. Data about collections are an important input into the directory described below.
- Within the structure of the ABS, developing statistical centres of expertise for particular subject matters. These statistical centres should have good knowledge of all statistics produced in particular fields, not just those produced by the ABS. For example, a statistical centre for agriculture would be familiar with agriculture statistics produced by the ABS, by the Department of Agriculture, Forests and Fisheries, by state bodies involved in agriculture, by producer boards and by research institutes involved in agriculture. The statistical centre should also be interested in links with other fields of statistics (for example, agriculture and the environment, agriculture and the household sector). In recent years, the ABS has set up a number of such statistical centres.

- The production of information development plans, in collaboration with key stakeholders, which describe the availability of existing statistics, the major gaps in these statistics or the major improvements required, and a plan for further developments in the field of statistics.
- A directory of statistical sources, from both the ABS and elsewhere. If electronic, this could provide a window on available statistics. Given the technology of today, this may not be a physical directory, but rather a virtual directory using 'Google search' type facilities across the released databases. Standards for describing metadata become very important in this context. Links to the actual data, not just the metadata, would be a very valuable extension.

In addition to making advances in this range of activities, the ABS is looking at a range of other new initiatives to improve statistical leadership.

One of the most important is the ABS National Data Network initiative. 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.

Concluding remarks

The ABS does have a fine history and has served Australia well. It plays a vital role in an Australian democracy – not just because it provides information that holds a mirror up to the society – but because that information is trusted.

This trust has proved important to governments as well. Because of it, discussions can focus on what the statistics mean for policy rather than on the integrity of the statistics themselves.

The Bureau's history has provided a fine shoulder on which to stand as we address the challenges of the future. There must be changes if the Bureau is to remain relevant and provide value for the money appropriated to it. But more than anything else we in the Bureau must be careful not to lose that trust – it is our comparative advantage. If we were to lose it, we would risk becoming just another information provider.

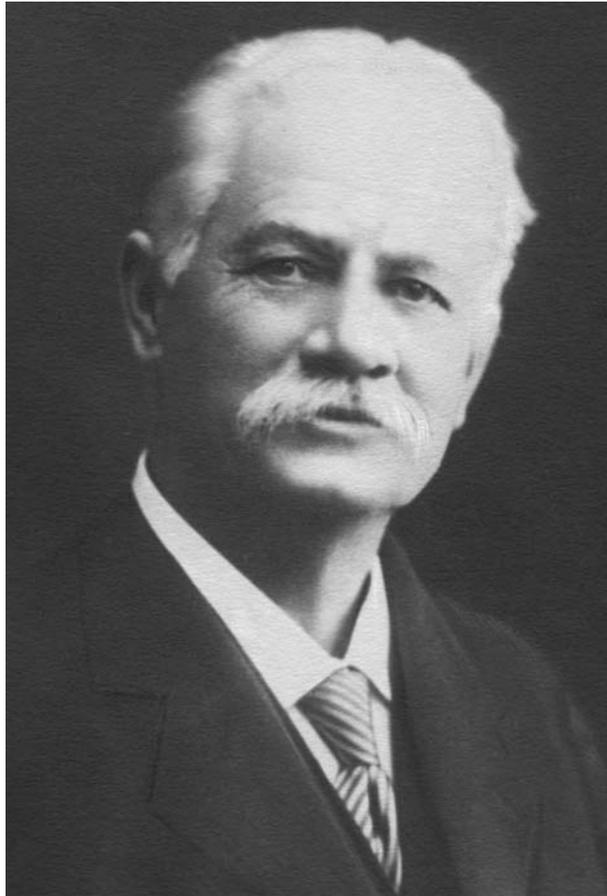
Commonwealth and Australian Statisticians

APPENDIX A:

OFFICIAL TENURE	NAME	POSITION
1906–1921	KNIBBS, George Handley, Sir	Commonwealth Statistician
1922–1932	WICKENS, Charles Henry	Commonwealth Statistician
1931–1932	GIBLIN, Lyndhurst Falkiner	Acting Commonwealth Statistician
1933–1936	McPHEE, Edward Tannock	Commonwealth Statistician
1936–1951	WILSON, Roland, Sir	Commonwealth Statistician
1940–1946	CARVER, Stanley Roy, Sir	Acting Commonwealth Statistician and Government Statistician of New South Wales
1948–1949	CARVER, Stanley Roy, Sir	Acting Commonwealth Statistician and Government Statistician of New South Wales
1951–1957	CARVER, Stanley Roy, Sir	Acting Commonwealth Statistician and Government Statistician of New South Wales
1957–1962	CARVER, Stanley Roy, Sir	Commonwealth Statistician
1961–1962	ARCHER, Keith McRae	Acting Commonwealth Statistician
1962–1970	ARCHER, Keith McRae	Commonwealth Statistician
1969–1972	O'NEILL, John Patrick	Acting Commonwealth Statistician
1972–1975	O'NEILL, John Patrick	Commonwealth Statistician
1976	COLE, Robert William	Australian Statistician
1977–1985	CAMERON, Roy James	Australian Statistician
1986–1994	CASTLES, Ian	Australian Statistician
1995–2000	McLENNAN, Bill	Australian Statistician
2000–	TREWING, Dennis	Australian Statistician

GEORGE HANDLEY KNIBBS

First Commonwealth Statistician 1906–1921.



Knibbs was born in Sydney on 13 June 1858. Before being appointed Statistician he had a long career in scientific and academic endeavours as a surveyor, lecturer in astronomy, engineering and physics, New South Wales Director-General of Technical Education and New South Wales Commissioner for an inquiry into that state's education. He was a member of, and had held numerous positions in, many scientific societies including the Royal Society of New South Wales. He also had interests in town planning, philosophy, music, languages and poetry.

While the discipline of statistics was not taught independently in universities at the time, as an astronomer and engineer Knibbs was one of the few academics with a sound academic knowledge of statistics in his time. As a surveyor he was also a mathematician, and his knowledge of maps would have been valuable to Census preparations. He also had a strong interest in demography and in particular was concerned about the world's population outgrowing the Earth's capacity to support it.

On his appointment, Knibbs immediately undertook extensive investigations into the best means of collecting statistical information and running a statistical agency. He visited each of the state statistical bureaus to investigate their methods of statistical collection. In addition he investigated the methods of international agencies by sending out requests for their publications. He quickly came to the conclusion that uniformity of state practices was the key to the production of good statistics.

Knibbs set about appointing suitable staff from various state agencies to the Commonwealth Bureau. Within a few years he released the first Commonwealth Year Book to universal acclaim. *The Times* of London at the time described it 'as the most wonderful book of its kind in the world'.

He ensured that the Commonwealth Bureau quickly gained a reputation as a source of reliable statistics within Australia and beyond. He was the author of *The Mathematical Theory of Population*, an internationally acknowledged treatise which set out complex demographic techniques, some of which are still in use today.

Knibbs developed a retail price index for Australia. He also produced national labour statistics for the first time, convincing trade unions to provide details of the employment of their members.

By the end of World War I, Knibbs became very interested in a plan to establish a British Empire Statistical Bureau, even writing a paper on the subject to present to the 1920 British Empire Conference of Statisticians. As arguably the most experienced official statistician in the Empire at that time, it seems that at least some expected him to be offered the position of Empire Statistician. However after the 1920 Conference the plan broke down and the Empire Bureau was never established.

In 1921 Knibbs left the Bureau and was appointed Director of the newly created Commonwealth Institute of Science and Industry, the forerunner of the Commonwealth Scientific and Industrial Organisation (CSIRO).

He was knighted in 1923 and retired from public service in 1926. Knibbs died on 30 March 1929 in Camberwell, Melbourne.

CHARLES HENRY WICKENS

Commonwealth Statistician 1922–1924, Commonwealth Statistician and Actuary 1924–1931.



Born in Lockwood near Bendigo on 16 October 1872, Wickens obtained his actuarial qualification in 1896 through private study. He migrated to Western Australia and joined their Public Service in 1897. He was promoted to the state's Statistical Bureau in 1899.

In 1906 Wickens became a foundation staff member of the Commonwealth Bureau of Census and Statistics.

In 1907 he received word that he had won an international essay prize from the London Institute of Actuaries on methods of determining mortality rates. He later established an enviable reputation as a 'vitals' statistician and is believed to be the mind behind the release of the Bureau's first life tables in the *1911 Census of the Commonwealth of Australia Statistician's Report* released in 1917.

Appointed Supervisor of the Census in 1913, Wickens introduced mechanical tabulating equipment incorporating the 'Hollerith' punched-card system for sorting and counting data for the 1921 Census.

As Statistician, Wickens' greatest achievement was in gaining significant progress towards uniformity in Australian statistics by establishing regular Statisticians' conferences between the state and Commonwealth Statisticians. Even New Zealand attended.

Wickens negotiated the transfer of the Tasmanian Statistical Bureau to the Commonwealth in 1924 and was also able to convince the Victorian Government to transfer its Bureau. However the economic situation of the 1920s and early 1930s intervened, putting a halt to this transfer.

Wickens also oversaw the move of the Bureau from Melbourne to Canberra in July and August 1928.

With a strong interest in economic matters, Wickens, along with LF Giblin, was an important contributor to *The Australian Tariff: an Economic Enquiry* (1929). He was one of the founding members of the Economic Society of Australia.

In 1931 Wickens suffered a serious stroke and was invalided from the Public Service in 1932. He never fully recovered and died on 30 July 1939 in Balwyn, Melbourne.

LYNDHURST FALKINER GIBLIN

Acting Commonwealth Statistician and Economic Adviser to Treasury 1931–1932.



Giblin was born on 29 November 1872 in Hobart. He received a good education, graduating from Kings College, Cambridge in 1896. His early career was varied and included periods as a gold miner, sailor, ju-jitsu teacher, orchard farmer, mathematics teacher and elected member of the Tasmanian state parliament.

As a state member he became an unofficial advisor to Treasurer Lyons (later Premier of Tasmania and then Prime Minister of Australia) on economic and financial matters. On the dissolution of the assembly in 1916 he joined the Australian Imperial Force and was wounded three times, winning a Military Cross.

Late in 1919 he was appointed Tasmanian Government Statistician and again became advisor to Lyons.

In the 1920s, Giblin actively sought unification between the Tasmanian Statistician's Office and the Commonwealth Bureau for two key reasons. Giblin was a practical man and could see that a small state such as Tasmania would be unable to financially support a state statistical office to the necessary level. Also Giblin was a strong supporter of uniformity between the state collections. The

integration of the Tasmanian Statistician's Office occurred in 1924.

In the same year Giblin helped to form the Australian Economic Society. Along with Commonwealth Statistician Charles Wickens, Giblin was an important contributor to *The Australian Tariff: an Economic Enquiry* (1929).

In 1929 Giblin was appointed to the Ritchie Chair of Economic Research at the University of Melbourne. He held the chair until 1940.

In April 1931 Giblin was asked to act as Commonwealth Statistician and Chief Economic Adviser to Treasury following Wickens' stroke.

During his eighteen months as Commonwealth Statistician, Giblin engineered the transfer of the Bureau from the Home Affairs to the Treasury portfolio, moving the emphasis of the Bureau towards economic matters. Recognising the need for continuing intellectual leadership, Giblin brought Roland Wilson to Canberra to help him review Australia's economic statistics.

After his stint as Commonwealth Statistician ended in December 1932, Giblin continued to play a

major role behind the scenes in Australia's recovery from the Depression and later in the war effort and in post-war reconstruction, serving on numerous government committees. He was a founding member of the Commonwealth Grants Commission and served on the board of the Commonwealth Bank.

Giblin died on 1 March 1951 in Hobart.

EDWARD TANNOCK MCPHEE

Commonwealth Statistician 1933–1936.



McPhee was born on 9 October 1869 in Hobart, the son of a school headmaster.

In a public service career spanning nearly 50 years McPhee spent over 45 years in statistics. He joined the Commonwealth Bureau of Census and Statistics as a foundation staff member in 1906, transferring from the Tasmanian Statistical and Registration Department.

Appointed Supervisor of the Census in 1922, McPhee's other major interest was overseas trade statistics. He contributed a number of economic papers to various scientific journals. In 1929 he became the Tasmanian Government Statistician and Deputy Commonwealth Statistician.

Appointed Commonwealth Statistician in January 1933, McPhee oversaw final arrangements for that year's census and supported continuing development of the new economic series being developed by Wilson.

As Commonwealth Statistician from 1933 to 1936, McPhee consciously mentored the development of Roland Wilson and recommended the appointment of Wilson as his successor.

After ending his public service career at the age of 66, McPhee lived a further 16 years in retirement. He died on 8 February 1952 in Hobart.

ROLAND WILSON

Commonwealth Statistician and Economic Adviser to the Treasury 1936–1940, 1946–1948 and 1949–1951.



Wilson was born on 7 April 1904 in Ulverstone Tasmania, the son of a builder.

He won several scholarships allowing him to complete his secondary education, and went on to graduate from the University of Tasmania with a Bachelor of Commerce in 1925. During this period, Giblin became his mentor.

From Tasmania he went to Oxford as a Rhodes Scholar, then on to Chicago. In 1930 he returned to Tasmania with an obvious career in academia beckoning. However in 1932, at the request of Giblin, Wilson moved to Canberra to take up a position in the 'backroom' of Treasury in the Statistician's Branch. With Giblin's support Wilson immediately began investigating new economic series and establishing a role for the Bureau in providing economic advice to government. In particular, he was instrumental in developing Australia's balance of payments. He quickly became an obvious candidate for the position of Commonwealth Statistician.

On appointment as Commonwealth Statistician in 1936 at the age of only 32, Wilson instituted an extensive review of retail price indexes and established

a significant research agenda supported by the appointment of highly qualified research officers. In an era when virtually all public servants started as messengers or base grade clerks and worked their way up through seniority rather than capability, Wilson employed and promoted university graduates as 'Research Officers', encouraged all staff to study at university and helped key staff to gain experience overseas.

The outbreak of World War II interrupted Wilson's plans for the Bureau, and in 1940 he was appointed head of the newly created Department of Labour and National Service. (It was during this period with the rationing of petrol, that Wilson famously built himself an electric car which he continued to drive until the late 1940s). At the end of the war he requested a return to the Bureau of Census and Statistics.

In the immediate post-war period, Wilson also served as a member, then Vice-Chairman and later Chairman of the United Nations Economic and Employment Commission. Other service included membership of the board of the International Monetary Fund and World Bank. These positions

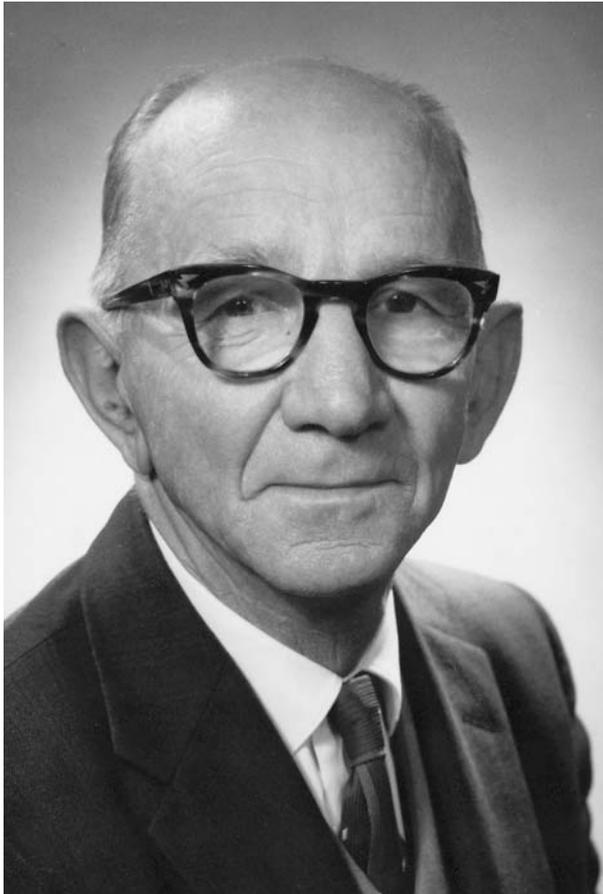
resulted in him working in the USA for 18 months.

Wilson was appointed Secretary of the Treasury in 1951, a position he held until 1966. He was one of the so-called 'seven dwarfs', leaders of the public service under the government led by Robert Menzies, who also happened to all be men of short stature. He was knighted in 1955. After his retirement Wilson was the chairman of Qantas and later the Commonwealth Bank.

Roland Wilson died on 25 October 1996 in Canberra.

STANLEY ROY CARVER

Acting Commonwealth Statistician 1940–1946, 1948–1949 and 1951–1957. Commonwealth Statistician 1957–1961.



The son of a barber, Carver was born in Goulburn on 7 February 1897. He grew up in Warren and Newcastle. In April 1916 Carver joined the New South Wales Department of Public Instruction and enrolled as an evening student at the University of Sydney. In 1918 he enlisted to serve his country in World War I, and served briefly in France before returning to Sydney in 1919.

In 1920 Carver was appointed to the State Bureau of Statistics and Registry of Friendly Societies and Trade Unions. He graduated with a Bachelor of Arts in English and Economics in 1921.

By 1933 he was promoted to Assistant Government Statistician in the renamed New South Wales Bureau of Statistics and Economics. Like Giblin and Wilson in the federal arena, Carver played a significant role in assisting New South Wales in its economic recovery after the Depression. This included accompanying then New South Wales Premier Stevens on a trip to the United Kingdom where he met the economists JM Keynes and Colin Clark.

Appointed Government Statistician of New South Wales in 1938, Carver was soon after seconded to act as Commonwealth Statistician for much of the period of World War II. During the war he was instrumental in keeping up the supply of statistics crucial to war decisions despite significant losses of staff.

Wilson found Carver so valuable that even when Carver returned to the New South Wales Bureau after the war, Wilson still relied heavily on him. By the mid to late 1940s Carver was effectively employed in two positions, as New South Wales Statistician and as Deputy Commonwealth Statistician. While Wilson was in the United States in 1948–49, Carver again acted as Commonwealth Statistician.

After Wilson was made Secretary to Treasury, Carver continued to only act in the Commonwealth position, choosing to remain the New South Wales Statistician. In the early 1950s he directed the expansion of the statistical service to meet the demands of a rapidly growing post-war Australia. In particular he was concerned with the failing retail

price index throughout the 1950s and he oversaw the development of the new consumer price index which was released in 1960.

Carver's greatest feat was in fostering a close level of cooperation between Commonwealth and state statistical activities, which finally resulted in unification of the state and Commonwealth agencies in the mid to late 1950s.

After this Carver finally accepted appointment as the Commonwealth Statistician and served until 1961. Ill-health forced his retirement from the public service, officially in 1962. He was knighted in 1962 and died on 22 July 1967 in Ryde, New South Wales.

KEITH MCRAE ARCHER

Commonwealth Statistician 1961–1970.



Another Tasmanian, Keith Archer was born in Launceston on 18 October 1905. He was one of Giblin's protégés, joining the Tasmanian Statistician's Office in 1923 based on the recommendation of his headmaster who had gone to Cambridge with Giblin. Archer also began studying at the University of Tasmania.

Ten years later Archer transferred to Canberra as tabulating superintendent to assist with the processing of the 1933 population census. This involved a move from an office with a total staff of eleven to taking charge of 160 tabulating staff.

After the 1933 census Archer worked on several other significant tasks including the processing of the 1939 National Register of Manpower and overseeing the mechanical tabulation area before working as Carver's personal assistant. In 1949 Archer was appointed Assistant Commonwealth Statistician and then Deputy Commonwealth Statistician in 1958.

Archer had by this stage gained a reputation as an organiser who showed great forethought in planning for the future of the Bureau. It appears that it was

Archer who arranged for Ken Foreman to be brought into the Bureau in the early 1950s to launch the Bureau's development of sample survey methodology. It was also Archer who pushed for the introduction of computers into the Bureau. As Commonwealth Statistician he eventually oversaw the installation of the first major computing service in the Commonwealth Public Service in 1963 after more than half a decade of planning and preparations.

Archer also established the Commonwealth Bureau of Census and Statistics Cadetship Scheme with the first intake in 1959. The program successfully developed a flow of highly qualified graduates for the Bureau and the Commonwealth Public Service.

By 1961 Archer was acting Commonwealth Statistician, and he was appointed in 1962. As Statistician he directed the introduction of the first Integrated Economic Censuses in the late 1960s.

On the international stage, he was Chair of the Organising Committee for the 36th session of the International Statistical Institute held in Australia for the first time in 1967, and he was also elected

Chair of the Conference of Asian Statisticians in 1968. He further enhanced Australia's statistical image when he was elected Chair of the United Nations Statistical Commission in 1968.

In 1970 Archer suffered a massive stroke and was forced to retire from the position of Commonwealth Statistician. However he recovered and continued to lead an active public life in positions on the boards of building societies and on government committees.

He retired from full-time work in 1984 and died in Canberra on 1 April 1999.

JOHN (JACK) PATRICK O'NEILL

Commonwealth Statistician 1970–1975.



The fifth Commonwealth Statistician born in Tasmania, O'Neill was born in Wynyard on 1 September 1910, the son of a blacksmith.

He was first appointed to the Hobart Office of the Commonwealth Bureau of Census and Statistics in 1928 and began studying at the University of Tasmania at around the same time. However in the early 1930s he became seriously ill, and after 18 months of leave he was compulsorily retired from the public service in 1933 at the age of 22.

Four and a half years later he had recovered sufficiently to be reappointed to a position in the Hobart office. O'Neill moved to Canberra in 1938.

During World War II, O'Neill was outposted to the Meteorological Bureau and later the Food Control Section of the Department of Commerce and Agriculture, both of which required his statistical expertise.

Back in the Bureau after the war, O'Neill gained a reputation as a developer of new collections and was made head of the newly formed Development Branch

in 1950. He was one of the key supporters of research and development into new statistical methods, later promoting the introduction of seasonal adjustment techniques in Australian official statistics during the 1960s.

O'Neill was made Assistant Statistician in 1954 and First Assistant Statistician in 1958. He acted as Commonwealth Statistician after Archer had a stroke in 1970 and was finally appointed to the position in 1972.

During his tenure as Commonwealth Statistician he oversaw the development of the *Australian Bureau of Statistics Act 1975* and the establishment of the position of Australian Statistician with the powers of a head of department.

Jack O'Neill retired in 1975 and died in Canberra on 11 October 1998.

ROBERT WILLIAM (BILL) COLE

Australian Statistician May–December 1976.



Bill Cole was born in Melbourne 16 September 1926. At fifteen he started in the Commonwealth Public Service as a telegraph messenger. After service in the Royal Australian Air Force during World War II, Cole completed a first class honours degree in Commerce from the University of Melbourne. He moved to Canberra in 1952 and joined the Commonwealth Treasury. In the late 1950s he worked at the International Monetary Fund. Cole was appointed an Assistant Secretary in Treasury in 1967, the Director of the Commonwealth Bureau of Transport Economics in 1970 and First Assistant Secretary in Treasury in 1972.

In 1976 Cole was appointed from Treasury to be the Australian Statistician. Although only in the position for eight months he oversaw the implementation of the difficult 1976 population census, including having to deal with challenges to its legal authority. He also established the key principles for the design of the 1981 census including responses to privacy concerns.

Cole was promoted to the Department of Finance in December 1976 as its first

Secretary. Subsequently he became Chairman of the Public Service Board in 1978 and Secretary of the Department of Defence in 1983.

Since his retirement from the Public Service, Cole has been active on a number of boards and committees including the Defence Force Retirement and Death Benefits Scheme Review Committee, the Military Superannuation and Benefits Board of Trustees and the Multiple Sclerosis Society of Western Australia.

He was knighted in 1980 for public service.

ROY JAMES CAMERON

Australian Statistician 1977–1985.



Roy Cameron was born in Port Pirie in South Australia on 11 March 1923. He studied at Harvard University, then lectured in economics at the Canberra University College from 1949 to 1951. From there he went to a position in the World Bank. In 1956 he returned to Australia to join the Commonwealth Treasury. In 1973 he was appointed as the Australian Ambassador to the Organisation for Economic Cooperation and Development.

Appointed the Australian Statistician in 1977, Cameron oversaw the 1981 and 1986 censuses, involving major policy changes regarding consultation with clients and the public. He also directed the major upgrade and expansion of computing facilities in the ABS during the late 1970s.

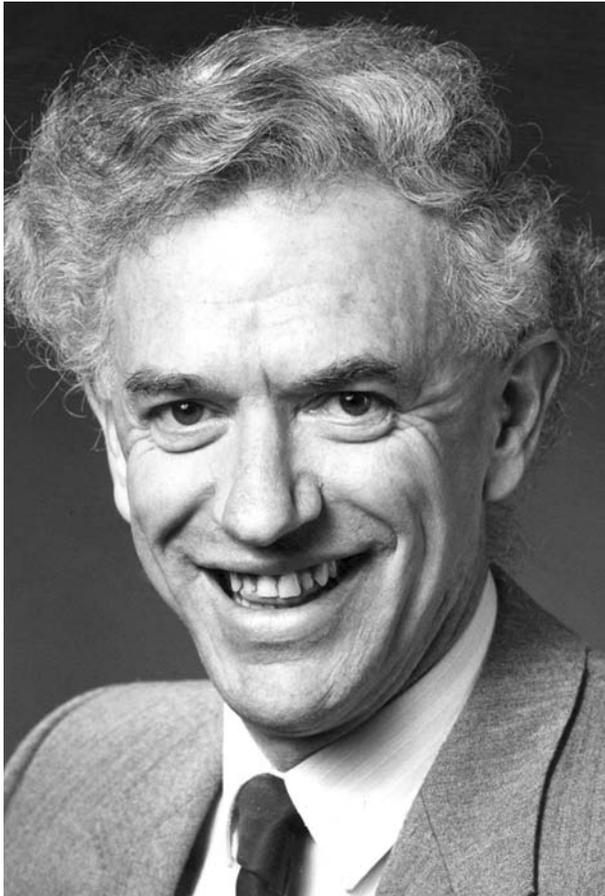
Cameron's key undertaking was to introduce disciplined corporate planning processes to the Bureau and to restructure the organisation of the central and state offices into one integrated and functional unit. He also played a significant role in the consolidation of the Australian

Statistics Advisory Council and directed an overhaul of the Census and Statistics Act in the early 1980s to resolve some initial problems with the legislation.

Cameron retired from the position of Australian Statistician in 1985.

IAN CASTLES

Australian Statistician 1986–1994.



Ian Castles was born 20 February 1935 in Kyneton Victoria. He graduated from the University of Melbourne with a Bachelor of Commerce. His first public service appointment was as an archivist at the Australian Archives in Melbourne. In 1957 Castles came to Canberra to work in the National Library. After 18 months he applied for a Research Officer position in Treasury and began his career as a public service economist.

In 1967 Castles was appointed Assistant Secretary in the Commonwealth Treasury. Within a couple of years he was sent to London as Treasury's senior representative. In 1973 Castles was promoted to First Assistant Secretary of the Economic Division in the Department of Prime Minister and Cabinet where he rose to the position of Under-Secretary. During this time he was chosen to chair the Income Security Review in 1975.

In 1979 Castles was appointed Secretary of the Department of Finance, where he remained until his appointment as Australian Statistician in 1986.

As Australian Statistician, Castles was a strong advocate of the professional role of an independent statistical bureau in underpinning informed decision-making, research and discussion within governments and the community. Castles strongly supported the research and analysis work of the Bureau with his emphasis particularly in the socioeconomic area. He also encouraged the Bureau to include greater analysis and commentary in its publications. Two flagship publications are a legacy from his time as Australian Statistician, *Australian Economic Indicators* and *Australian Social Trends*.

He was elected a Fellow of the Academy of Social Sciences of Australia 1989.

Castles also contributed to the Bureau's international standing as President of the International Association of Official Statistics from 1991 to 1993. He also worked as a member of the International Monetary Fund's expert working group on international capital flows.

Castles retired from the public service in 1994, but he has continued an active international academic career.

WILLIAM (BILL) PATRICK MCLENNAN

Australian Statistician 1995–2000.



Bill McLennan was born on 26 January 1942 in Grafton, New South Wales. A career statistician, he joined the Bureau in 1960 as a statistics cadet in only the second year of the cadetship scheme. By 1964 he had completed his degree in statistics and economics from the Australian National University and had begun working full-time in the Bureau.

In his early days in the Bureau, McLennan worked primarily in the sampling and methodology areas. In 1973 he was promoted to the Assistant Statistician level. In 1979 he transferred to Melbourne to take up the position as Victorian Deputy Commonwealth Statistician. However within six months he was promoted to First Assistant Statistician and transferred back to Canberra to head up the Coordination and Management Division. In this position he led the overhaul of the Census and Statistics Act in the early 1980s.

McLennan played a major role in establishing the ABS corporate planning system, later overseeing the development of the first ABS Corporate Plan which was launched in 1987. In 1986 he was appointed Deputy Australian Statistician.

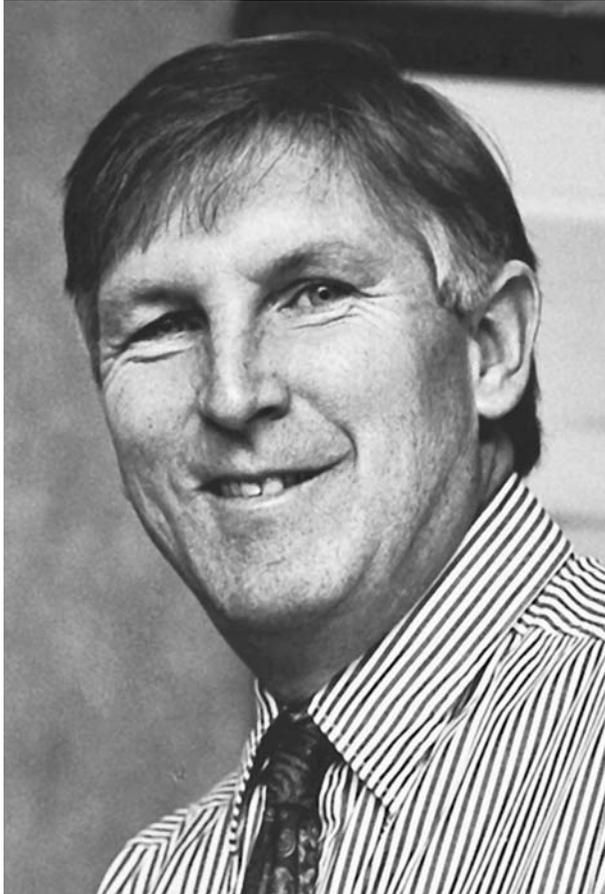
During the 1980s and 1990s he provided strong leadership and direction to ABS technology, statistical and dissemination activities. He improved the readability of ABS publications and fostered the introduction of electronic dissemination services.

In 1992 McLennan was appointed Director of the United Kingdom Central Statistical Office and Head of the Government Statistical Service, and left the ABS. He returned as Australian Statistician in 1995. As Statistician he led the increase in use of administrative data for statistical purposes. McLennan recognised the importance of influencing Australian statistical activities outside the ABS to fully develop a national statistical service. He also instituted the program to provide statistical and technical cooperation to developing countries in the Asia-Pacific region, building on his earlier work as Deputy Australian Statistician, and he was a major influence in upgrading statistics in the region.

McLennan was the Chair of the United Nations Statistical Commission from 1994 to 1995. He retired from the position of Australian Statistician in 2000.

DENNIS JOHN TREWIN

Australian Statistician 2000–present



Dennis Trewin was born 14 August 1946 in Melbourne. Like his predecessor, Trewin was a career statistician, starting work in the Bureau in 1966 as an honours cadet. He received his first degree from Melbourne University in 1967 where he won the Maurice H Belz prize for statistics. As a statistics cadet Trewin started his Bureau career in sampling and methodology and spent much of his early career there.

From 1974 he spent two years at the London School of Economics where he was awarded his Masters majoring in statistics and econometrics.

Trewin was appointed First Assistant Statistician of Industry Statistics Division in 1983. From there he moved to the position of First Assistant Statistician of Statistical and Information Services Division in 1986 which included overseeing the conduct of the 1991 Census. In this position he was also instrumental in developing the role of marketing in the ABS.

In 1992 Trewin was appointed as the Deputy Government Statistician of New Zealand for three years. He returned to Australia in 1995 to take up the role of Deputy Australian

Statistician with a particular responsibility for all economic statistics. In July 2000 he was appointed Australian Statistician.

Dennis Trewin was President of the Statistical Society of Australia in 1987–88 and is a life member of the society. He was made a member of the International Statistics Institute in 1984 and was President of the Institute from 2001 to 2003. He is chairman of the World Bank's Global Executive Board of the International Comparison Program.

In 2003 Trewin was named the winner of the 'Society' category in The Bulletin's Smart 100 Awards for making 'a significant and positive contribution to Australian life'.

Buildings of the Bureau

APPENDIX B:

Over almost 100 years of the Bureau's existence, location has often been a significant issue. On many occasions it has grown too large for one location and has had to split an office between sites several times before finally relocating all the units of that office in one building.

Right: The Rialto, Collins St, Melbourne at the turn of the century.



The early years in Melbourne

The Commonwealth Bureau of Census and Statistics started its life in 1906 in Melbourne, along with the rest of the new Commonwealth public service. The first building in which the Bureau was housed was the old Rialto Building in Collins Street. In 1926 it moved to the Post Office Building. Many of the staff were recruited locally from Melbourne and the surrounding towns.

Moving to Canberra

The CBCS staff were sent to Canberra as part of the second wave of public service transfers in July and August 1928. Before they left, then Commonwealth Statistician Charles Wickens put considerable effort into negotiating for the female staff to be housed together, as the parents of the young women were threatening to not allow them to leave Melbourne if they were not housed together under the watchful eye of their female supervisors who could act as guardians. As many of these women were trained as Hollerith Machine operators, Wickens was keen not to lose any.

On their arrival most of the men and women were housed (separately) in dormitory-like quarters. Some of the clerks had to leave their wives and families in Melbourne until more suitable accommodation was available.



The Jolimont Building, Alinga Street, Civic Centre was occupied by census staff for more than 30 years and was renamed the Census Office.

On the other hand the office accommodation was ready, and the Bureau staff moved straight into three floors of West Block. Initially there were plans to move the Bureau from there to take over the Hotel Acton. Because of the economic crisis in the early 1930s this never eventuated. The Bureau remained in West Block until 1966.

The available space in West Block was insufficient for the work associated with the census. The census staff were moved from West Block into the old Jolimont Building in the early 1930s to process the 1933 census. This building had been relocated from Melbourne. A weatherboard construction, it was cold in winter and hot in summer. While some areas of the building were properly lined and heated, others were not. Staff who worked in it talk of wooden floors with no covering, and in some areas the walls were lined with galvanised iron while in others there was no internal lining. In some places it was possible to see outside through the spaces between the weatherboards.

'A weatherboard building, as cold as the hammers of hell in wintertime, and the first summer I was there we had six days with the temperature of 110 in the room, because the walls of some of the rooms were just galvanised iron.'

Keith Archer (describing the Census Office in the 1930s), interviewed in 1971.

'There were about a dozen or so in our group and we had one electric bar radiator which did little to heat any of the area. We wore our heavy overcoats and during the day got progressively colder starting at our toes and ending at our necks. Every now and again someone would jump up and start running on the spot in a vain effort to get back a little circulation.'

Max Griffiths (describing the Census Office in the 1940s and 1950s), personal comments, 2003.

West Block in that era does not seem to have been much better. During World War II it was colloquially known as the 'Sweat Box' in the hot summers. In winters the floors

became very cold, to the extent that one year in the 1930s the staff of the typing pool were given coir mats on which to rest their feet. After that winter the mats were taken away, but the women in the pool objected so strongly that they were returned. (Frank and Joan Sayer, 2003)

'We worked in West Block in frigid conditions ... There was no effective heating until 4 o'clock in the afternoon and people used to work with their overcoats on and blue flame stoves. It was a terrible place climate-wise in those days, until oil heating came.'

Max Bartlett (describing West Block in 1951), interviewed in 2000.

For women there was an added problem with West Block. When it was first built, the vast majority of public servants were male so there was little provision made for women's toilets.



West Block, Parkes. The Bureau occupied this building from 1928 to 1966.

Early state offices

The Tasmanian bureau joined the Commonwealth Bureau in 1924. At that time it was located in Davey Street, Hobart. The transfer agreement specified an inventory of furniture and equipment that was to transfer to the Commonwealth. Among other things, it listed five desks, ten chairs and four cupboards, as well as one adding machine, one typewriter and three slide-rules. In 1927 the Tasmanian office moved into Bursary House (later known as the ABC Building) in Elizabeth Street opposite the post office. This was a new building at the time and today is the façade of the ANZ Centre.

During World War II the Commonwealth Bureau first established offices in Sydney and Melbourne. In Melbourne it occupied part of the Nicholas Building in Swanson Street. The Sydney office of the Commonwealth Bureau was first in the Tatler Building in George Street. But even before the official unification of the NSW Bureau

of Statistics with the Commonwealth Bureau, the two offices were housed together in the Dymocks Building.

The Northern Territory Office was permanently established in 1954, initially to facilitate the collection of the 1954 census. It was first housed in old World War II sheds. During the wet season the water flowed into the sheds as the walls did not go down to the ground.

The spread of central office

The Bureau continued to use West Block and the Census Office for almost 40 years. In the 1950s the Bureau began also using space at the old Printer's Office in Kingston. This was the start of the farming out of Bureau sections to various locations in Canberra. When the Bureau acquired its first computer in the 1960s, it was installed in the Printer's Office. The mechanical tabulation machines were already there. The Bureau used both the 'old' and the 'new' Printer's Offices through to at least 1966.

Throughout the 1960s and into the 1970s the number of buildings used by the Bureau proliferated. Some housed training courses, others only one or two sections, and others housed branches or larger groups. The list includes the Docker and Mackay Buildings in Mort Street in Civic; Douros House in Kingston; Jardine Street and Green Square in Kingston; the GIO Building in Northbourne Ave; Barrier Street in Fyshwick; Woolley

A Distant Lament

O once we were happy and cheerful as larks,
As we programmed away in the NTB* Parkes.
We had all the turn-around that we could wish for,
But alas all those glorious times are no more.
For the terminal's down, the display's blown a tube,
There's a hold-up on Commonwealth Bridge

Macarthur House Lyneham's a fine place we know
And the cafe's quite good if you've got enough dough
But none can complain in the way that our folk'll.
We don't want remote access, we'd much prefer local.
For the terminal's down, the display's blown a tube,
There's a hold-up on Commonwealth Bridge

'Cause we try to run jobs and we find to our horror
The terminal's clogged, better come back tomorrer.
So back to the keyboard, brush up your technique
Or dispatch it by truck, then it's lost for a week.
For the terminal's down, the display's blown a tube,
There's a hold-up on Commonwealth Bridge

But we go to Belconnen next year so they say
And our woes of submission will all pass away
Meanwhile users upon our results are still countin'
So we'll start our own embassy beside the fountain.
For the terminal's down, the display's blown a tube,
There's a hold-up on Commonwealth Bridge.

Kerry Webb, unpublished poem, c.1970s. This poem was rejected for publication in an ABS newsletter in the 1970s, apparently for covering a topic that was too sensitive at the time.

*New Treasury Building.



Statistics entrance, Treasury Building, Canberra, 1972.

Street in Dickson; and Macarthur House on Northbourne Ave. The proliferation peaked in the mid 1960s when the Bureau occupied space in seven buildings at the same time. This was in an era before electronic communications had taken off.

In 1966 the official Bureau building moved from West Block to the 'new' Treasury Building, which housed the Commonwealth Statistician's office. The computers were also relocated into the Treasury Building from the Printer's Office in Kingston. However the new office did not overcome the lack of space for all Bureau staff and a longer-term solution was clearly required. In particular a large number of staff remained in Macarthur House until the mid 1970s.

State offices from integration to the 1970s

All the State offices had become a part of the Commonwealth Bureau by the late 1950s. The Commonwealth offices located in Sydney and Melbourne were integrated with their state office counterparts.

In Sydney, the state office moved to the Commonwealth Government Centre in Chifley Square on integration in 1958. It stayed there only five years before moving to Bank House in George Street in 1963. Over a seven week period in July–August, 1978 the office moved into floors three to six of St Andrew's House in Sydney Square. When the Sydney office moved into St Andrew's House a new phone system was installed. However it was not available when the office first moved in, so temporary facilities were provided which involved each call (including every internal call) being individually connected by an operator. The Sydney office has remained in St Andrew's House ever since.



The Craig Williamson Building in Melbourne.

In Melbourne the newly integrated office was moved into the Craig Williamson Building in Elizabeth Street (known as Craig's Building or the old Commonwealth Building).

'Craig's Building was formerly a turn-of-the-century department store. It became an archetypical public-service building of the era – wooden stairs, cream and green walls and linoleum-covered floors. The Bureau occupied the third and fourth floors. I well remember Frank, the lift operator, and his cheery greeting.'

Geoff Weatherhead, personal comment, 2001.

'The Craig Building had cast iron columns and wooden floors. The lift had a crank handle and an operator. Stairs were wooden. The switchboard was a plug-and-cord type. It was notorious for its rats. When the rats died under the wooden floors they couldn't be retrieved, so would stink for a long time.'

ABS Victorian Office, unpublished paper, 2003.

In the late 1960s the Victorian office moved first to Little Collins Street and then to a new building in Elizabeth Street. At that time all directors of sections were housed together on the one floor – unfortunately it was the 13th!

The installation of computers into the Elizabeth Street building provided great public entertainment. Tramlines had to be taken down and a crane was used to lever the computers into the building.

In 1972 there was flooding in Melbourne. Elizabeth Street was under water, with cars floating down the middle of the street. The basement of the Elizabeth Street building was flooded and staff found themselves marooned in the building.

The Queensland office was initially located in The Mansions on George Street. The building was in a bad state with holes in the walls that the staff would stuff with old newspapers. There was even an instance of someone falling through the floor.

'... The Mansions, a heritage listed building in George St, full of vermin and everything (including the workers) smelling strongly of stale cigarette smoke.'

Dalma Jacobs, Retirement speech, 2000.

In the early 1960s the Queensland Office moved to the Taxation Building in Adelaide Street. In the early 1970s it moved several times before finally relocating to Statistics House in Ann Street in May 1975. The floors all 'leaned' towards Ann Street, so the compactuses would close themselves at night if they faced the street.

Following integration, the South Australian office continued to be located in the State Bank building which was situated at the corner of Pirie Street and Gawler Place. The office then moved into the Da Costa building in 1959. In the late 1960s the office moved to the Prudential Building, where some managers' offices were located in the stairwells. The building had pale green vinyl



The Mansions in Brisbane.

floor tiles, and airconditioning ducts along the windowsills rather than in the ceiling. The external windows were fitted with heavy adjustable sunshades. The office outgrew the building, so additional space was found for the Public Finance and Prices staff in IMFC House in King William Street. The ceiling of the Prudential Building was full of powdery blue asbestos, which led to a move to the Capita Centre in 1978.

The South Australian office occupied three floors of the main tower of the Capita Centre, and a two-storey annex to accommodate the information service and library. This building was notorious for its cracking. Early ABS occupants of the main tower watched the building of the annex with amazement. When the steel cross-members arrived they were too long to fit within the steel uprights, so the builders forced the uprights apart with bobcats to accommodate the cross-members.

'The annex was broken into a couple of times – but amazingly not a single statistical publication was ever stolen!'

Steve Matheson, personal comment, 2004.

The West Australian office originally occupied the then Prudential Building at 189 St George's Terrace, and then moved along the Terrace into the tallest building in Perth at the time, the T&G Building. It had magnificent views but no airconditioning. At the beginning of the 1970s the office moved to the Commonwealth Centre, also in St George's Terrace.

During the 1970s there was a big payroll robbery. Each fortnight an armoured vehicle with enough cash to pay Bureau staff, as well as Taxation Office and Sub-Treasury staff, would back into the bottom of the building and unload the strongboxes into the goods lift, then drop them off at each pay centre on different floors. On this occasion a couple of robbers positioned themselves on the roof of the lift. After the lift started its ascent they

removed the peephole and advised the lift occupants not to do anything or they would be shot. The robbers were able to control the lift from the roof. They halted it between floors, tied up and gagged the occupants, then descended to the ground floor where they unloaded the strongboxes and took off.

'The loot was never recovered, nor were the robbers ever brought to book. A lot of public servants went payless that day.'

Martin Greay, personal comment, 2004.

Following this event there was a groundswell of concern from goods lift attendants and payroll clerks that cash pays should be abandoned because of the danger involved. The Public Service did eventually abolish the custom of handing out cash to public servants on payday.

The Tasmanian office was located in the T&G (Temperance and General Insurance) Building in the 1950s and 1960s. This building had no airconditioning.



Cavenagh Street, home of the Bureau in Darwin in 1965. The Bureau inhabited bedrooms two and three.

One hot afternoon Bureau staff opened a couple of corner windows and the resulting breeze caught up a completed, hence confidential retail survey form from a desk and it floated out the window and headed down the street directly towards the retail establishment from which it had been collected. A young Robin Green raced downstairs to collect it while another officer watched from the window to ensure that no one pocketed the form. The Bureau's reputation was saved as the form was collected before anyone else could pick it up.

In early 1969, the Tasmanian office moved to Kirksway House, which was a purpose-built office for the Bureau and the Department of Veterans' Affairs. In 1973 it moved again to the Commonwealth Government Centre at 188 Collins Street. Although it has moved several times since, the Tasmanian office has remained in Collins Street from that time on.

In 1965, the Northern Territory office of the Bureau was finally moved from the shed it had been in since 1954. However it still did not move to a 'normal' office block, but moved instead into a 3-bedroom home in Cavenagh street, which it shared with the Department of Immigration. The Bureau used bedrooms two and three.

The Northern Territory office had several more moves in the 1960s and 1970s until the office moved into what was then the MLC Building in 1973. This was the building occupied by the Northern Territory office during cyclone Tracy. Apparently during the cyclone, staff from the Bureau of Meteorology, who worked in the same building, heard loud noises from the Bureau's offices. On investigation they found that some windows had blown out and unlocked filing cabinets were being sucked open and shut by the gales.



Wing 4, one of the nine wings of the Cameron Offices.

Cameron Offices

By 1970 the central office of the Bureau had been promised the tenancy of the first government offices to be built in the new Belconnen Town Centre.

'None of us were terribly keen on the fact that this office was going to be in Belconnen, but we were terribly keen on the idea of having a building of our own for the first time.'

Fred Bagley interviewed in 2000.

Cameron Offices were built progressively, and by 1973 Bureau staff started to move in. By 1975 all 1650 staff had moved into the one location. At the time the building featured the latest developments in heating, cooling, disposal and document conveyancing systems. The building design had won an architectural award before it was even built. The open office space itself was revolutionary at the time. The gardens between the wings and on the roofs were also very innovative.

However by the 1980s some of the shine had come off. The new building was leaking. Some floors in Cameron Offices were covered in plastic 'tents' in an attempt to contain the leaks. Lines made of material hung down from the plastic to channel the water into buckets.

Eventually the gardens and tennis courts on the roofs were removed and the area was covered with metal roofing, which fixed most of the leaks although the building was still leaking in a few places when the Bureau finally moved out in 2002.

Also, despite its size a little more space always seemed to be needed. In the 1980s the Bureau still had a location in Barrier Street, Fyshwick which it used mainly for storage, and in the 1990s it also used offices behind the old Norths Rugby Club.

State offices in the 1980s and 1990s

Throughout the 1980s and 1990s most of the state offices of the Bureau regularly moved as staff numbers expanded and receded.

New South Wales was the one exception as it remained in St Andrew's House which was refurbished in 1994. Its position in Sydney Square resulted in some unexpected assistance in locating the homeless in Sydney for the 1996 census.

'One unexpected source of help in locating areas where such people might be found came from a homeless person who lives in the square below the Sydney ABS Office ... [she] is known to some of the CMU staff who see her every day when they come to work.'

NSW office census staff, personal comment, 1997.



Initially the homeless woman even considered becoming a special collector for the Bureau. In the end she decided that she wasn't comfortable with that role, but she was happy to suggest some places where people were likely to be found.

The Victorian office outgrew the available office space in Elizabeth Street, so separate accommodation was leased in the adjacent block in Flinders Street. Finally in 1987 the Victorian office moved onto the site of the original Rialto Building in which the Commonwealth Bureau had first been located in 1906. It was by then a modern twin tower, the tallest office block in the Southern Hemisphere. It was the most expensive office space the ABS held throughout Australia at the time. The design and fit out took 15 months to complete, adding to the cost.

In 1996 the Victorian office moved into the CU/CGU Tower in La Trobe Street. The rent was significantly less than had been paid for the Rialto Tower.

The Queensland office moved only once during the 1980s, back to Adelaide Street but into Number 313. There it will remain until late in 2005. Then it plans to move to the new Citygate building in Ann Street, Fortitude Valley where the Bureau will be the sole tenant of the three commercial floors of the building.

The South Australian office moved from the Capita Centre to the Commonwealth Centre in 1988. The building was considered 'state of the art' when the Bureau first moved in. The Bureau remains in this building today although it is now privately owned.

The Western Australian office moved into the building then known as the Merlin Centre, at the eastern end of the central business district, in 1984. Like Cameron Office staff, the West Australian staff also experienced

some problems with leaks in this building. In 1994 the office was relocated to Exchange Plaza in Sherwood Court, Perth.

The Tasmanian office moved across the road from the Commonwealth Government Centre to 175 Collins Street in 1986. Then it moved back across the road again in 1997 to co-locate with the Australian Taxation Office at 200 Collins Street.

After the move into the MLC building in 1973 the Northern Territory office confined itself to changing or occupying additional floors. The building was renamed AANT House in 1990.

In 1990 the embryonic ACT office (at that time consisting of one staff member) moved into the FAI building in Civic. In December 1999 the office moved into the QBE Building, also in Civic.



ABS House

In the late 1990s it was announced that the Bureau's central office would be the tenant of a new building, and on 21 February 2002, ABS House was opened. The building won a National Building and Construction award as well as several other awards. It was designed to be the headquarters of the whole Bureau and to bring staff together, with the central atrium acting as a communal space. Innovations include touch down desks where visiting interstate officers can log into the network, carer's rooms to enable staff to carry out their work while caring for dependants, and utility rooms which centralise services such as printing and photocopying.

The new building has proved popular with central office staff. However at least one staff member has been heard to muse whether the occasional bucket in the atrium on rainy days was a special feature of the new building, thoughtfully provided so that staff would not feel too homesick for Cameron Offices!

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