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CENSUS 86: DATA QUALITY - ABORIGINAL AND
TORRES STRAIT ISLANDER COUNTS**

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PREFACE

This paper has been prepared with the aim of assisting users of 1986 Census of Population and Housing data on the Aboriginal and Torres Strait Islander population by providing an assessment of the data quality. The effects on data quality of question design, coverage, respondent error (including non-response) and actions taken during office processing of the data are all dealt with in this evaluation.

The paper is one of a number of proposed publications dealing with the quality of 1986 Census data. It was prepared in the Population Census Development, Evaluation and Coordination Group by Philip Partridge and David Smith. Assistance by way of helpful comments came from many other members of ABS staff, in particular Dan Black and Shail Jain.

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MAIN FINDINGS

The 1986 Census counted 227,645 people of Aboriginal origin, an implied growth of 42 per cent since the 1981 Census. For the majority of States and Territories, the increase was greatest in urban areas, particularly capital cities and other major centres which recorded an increase of 76 per cent over the corresponding figure for 1981¹.

An analysis of the demographic structure of the 1986 Census data reveals that the data are free from any serious anomalies. Despite the very large growth in the counts of Aboriginals between 1981 and 1986, the age-sex structures of the two census counts display a high level of consistency.

Consistency checks with the census data collected on 'ancestry' give broad level support for the 1986 Aboriginal counts even though the ancestry data are not free of their own conceptual and reporting problems. Comparisons of 1986 Census counts with corresponding data obtained from several non-census sources also provide confidence in the accuracy of the 1986 Census results.

A number of factors have contributed to the large increase recorded in the 1986 Census. Improved collection arrangements, a more effective public awareness campaign, better data processing methods and the effect of natural increase all contributed to the growth. However, while the natural increase could be expected to contribute no more than about 14,000 of the 68,000 increase recorded, and the other factors probably even less, the major influence is considered to be an increase in the propensity of people to record themselves and their households in the census as being Aboriginal.

¹ See *Census 86 - Aboriginals and Torres Strait Islanders: Australia, States and Territories (2499.0)*

1. BACKGROUND

This paper reports on an evaluation of the counts of people of Aboriginal origin in the 1986 Census of Population and Housing². In addition, an examination is made of the various factors which may have contributed to the large increase in the numbers of Aboriginals counted, from 159,897 in the 1981 Census to 227,645 in 1986.

Chapter 2 of the paper deals with changes made to census-taking procedures which may have influenced the coverage of the Aboriginal population in the 1986 Census or the comparability of the 1986 counts with those of previous censuses. Chapter 3 presents an evaluation of several aspects of the 1986 Census Aboriginal counts, including demographic and geographic analyses as well as comparisons of census data with data about Aboriginals obtained from other sources. A summary of the findings of this evaluation is provided in Chapter 4.

Data about the Aboriginal population have been collected in every national census since Federation. However, before the 1971 Census, particulars of full-blood Aboriginals were not included in census results in keeping with Section 127 of the Constitution which, prior to its repeal in 1967, provided 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.

Since the repeal of Section 127, the Australian Bureau of Statistics (ABS) has attempted to collect data on the Aboriginal population which are as comprehensive as the data gathered from the rest of the Australian population.

The enumeration of Aboriginal people in the population censuses conducted since 1971 has undergone progressive improvement due to a greater emphasis on public awareness campaigns, the involvement of Aboriginals directly in census collection activities, the adoption of special field procedures and developments in data capture methods.

In October 1978 the Commonwealth Government adopted the following 'working definition' of Aboriginality (which had already been in widespread use by both Commonwealth and State government bodies since 1968):

An Aboriginal or Torres Strait Islander is a person of Aboriginal or Torres Strait Islander descent who identifies as an Aboriginal or Torres Strait Islander and is accepted as such by the community in which he or she lives.

The census definition of Aboriginality encompasses the first two of these conditions in the Aboriginal origin question included in the 1986 Census. For people who have only Aboriginal ancestors the definition generally presents no problem. People of 'mixed origin' may legitimately choose to identify themselves as 'Aboriginal', 'Torres Strait Islander', or as 'not Aboriginal', depending upon their affiliations at the time of enumeration. The responses of these persons to the 'origin' question will depend upon their self-perception and their attitude to stating that self-perception. This may also be true for some persons who have only Aboriginal ancestors but who may not wish to identify themselves as Aboriginal. Hence the census count of Aboriginals depends upon the willingness of people to identify themselves as of Aboriginal origin.

The result is that, regardless of changes in census practices, the size of the Aboriginal population as defined by the census count may fluctuate over time if the affiliations of individuals change.

The effects of shifts in identification on census Aboriginal counts are very difficult to estimate in the absence of reliable alternative data sources. In addition, it cannot be assumed that the pattern of identification found in the census will be reflected in Aboriginal data from other sources, usually by-products of administrative activity. The circumstances surrounding different administrative data collections may induce different attitudes to identification.

The subject of changing patterns of identification in the census and resulting implications for census Aboriginal counts is dealt with in the conclusion to this paper (Chapter 4).

² In this paper, the term 'Aboriginal' is used to refer to persons of both Aboriginal and Torres Strait Islander origin, unless otherwise stated.

2. CHANGES TO CENSUS PROCEDURES

Among the factors that affect the accuracy and reliability of Aboriginal data are the procedures employed by the ABS to conduct the census. While a number of supplementary procedures designed to improve the enumeration of Aboriginals were incorporated in the 1981 Census an evaluation of the 1981 procedures identified several areas where further improvements could be made. As a result, changes were made to the census form design, field operations, the public awareness campaign and the data processing system for the 1986 Census. The changes and their potential impact are discussed in the following paragraphs. For a comprehensive treatment of changes in census procedures relating to Aboriginal enumeration in the censuses from 1971 to 1981, the reader is referred to *An Evaluation of Census Counts of the Aboriginal Population, 1971, 1976 and 1981 Censuses* (ABS Occasional Paper 1985/2).

2.1. Form design

Three different types of forms were used to collect data in the 1986 Census - the household, personal and remote area interview forms. The format and wording of the Aboriginal origin question used in the 1981 Census household form and retained for the 1986 Census, is shown below:

<p>9. Is the person of Aboriginal or Torres Strait Islander origin?</p> <p>• For persons of mixed origin, indicate the one to which they consider themselves to belong.</p>	<p>4 <input type="checkbox"/> No</p> <p>5 <input type="checkbox"/> Yes, Aboriginal</p> <p>6 <input type="checkbox"/> Yes, Torres Strait Islander</p>
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The question was moved, however, from being the second last on page two to become the first question on page two. This relocation also entailed a sequence change; the origin question was the ninth question in 1986 instead of being the sixteenth in 1981. The same change was incorporated into the 1986 personal form. Questionnaire design changes of this nature can be expected to reduce the incidence of non-response and thereby improve the quality of the data obtained from the question.

The 1986 Census forms were specifically designed for key-entry data capture. In addition, a space was provided on the front of the forms for a 'check total' of the number of Aboriginals in the household to be recorded during coding (see section 2.4 for details).

For the 1981 Census, a remote area interview form was designed for use in predetermined 'remote' Aboriginal communities in Western Australia, South Australia and the Northern Territory where language and literacy problems make the use of the self-enumeration technique impractical. While the same approach was adopted for the 1986 Census, the set of three sheets which were used in 1981 to separately list personal details, dwelling details and all persons counted in each community were replaced by a booklet-style form for households in 1986.

In keeping with the practice used for the household form, the 1986 Census remote area interview form was designed to count people by household, with sufficient space being provided for the census details of up to seven persons. Although the wording of many questions in the new form was changed to a format more suited to personal interview, the concepts behind the questions remained the same. As a result data collected about Aboriginals in remote areas are conceptually equivalent to data for the rest of the Australian population. The 'Aboriginal' response box in the origin question was pre-ticked. Instructions were provided so that Torres Strait Islanders and other non-Aboriginals could be correctly classified by over-writing this mark.

In all, just under 37,000 Aboriginals were enumerated using remote area interview forms; approximately 10,800 in Western Australia (29 per cent of the total Aboriginal population in that State), 2,400 in South Australia (17 per cent) and 23,800 in Northern Territory (68 per cent).

2.2. Collection arrangements

The field system strategy developed for the 1986 Census incorporated a number of refinements to the supplementary procedures employed in 1981 directed at obtaining a full coverage of the Aboriginal population.

The use of special Census Field Officers (CFOs) instituted in the 1981 Census was again the central feature of the enumeration strategy for Aboriginals. In 1986, the CFO program was extended with CFOs being appointed in all States and the Northern Territory. Additionally, in those States and Territories where CFOs had been used in 1981 (New South Wales, Western Australia, South Australia and the Northern Territory) staff resources allocated to CFO positions were significantly increased.

In South Australia, Western Australia and the Northern Territory, CFOs in remote areas were made responsible for all aspects of Aboriginal enumeration within their areas of jurisdiction, including collector recruitment and training, and the resolution of problems which arose during the taking of the census. In all other areas, CFOs concentrated on census awareness activities, although these officers were also asked to provide Divisional Field Supervisors with the names of suitable people to help in areas with significant numbers of Aboriginals, and to identify in advance of the census any areas of Aboriginal population requiring additional measures to ensure successful enumeration.

In 1986 a greater number of Aboriginal people were employed as collectors and assistant collectors than in 1981; Aboriginals were also appointed as CFOs for the first time. Urban collection districts with more than 25 Aboriginals were also identified for special attention during enumeration, such as whether Aboriginal field staff were required to help with the enumeration of Aboriginal households in the area.

In addition, measures were taken to ensure that the Aboriginal field system meshed more successfully with the main census field system. Areas of responsibility were clearly delineated for CFOs and for the main field system.

Taken together, these measures amount to an enhancement of enumeration procedures.

2.3. Public awareness

Following the 1981 Census there were reports that some Aboriginal people, particularly in urban areas, had been unaware of the census or did not understand its importance. For the 1986 Census, therefore, awareness activity directed at gaining the acceptance of the census by Aboriginal people became a major objective. A special awareness campaign was conducted by the ABS through Aboriginal service organisations, Aboriginal media, government agencies and field work performed by CFOs themselves supplementing the public awareness campaign directed at the population in general. The campaign was augmented by the use of promotional videos, posters and brochures stressing the importance of the census for the planning of programs aimed at Aboriginal development.

Greater emphasis was placed on promoting the census amongst urban Aboriginals in 1986. CFOs were instructed to identify significant Aboriginal communities prior to the census. These were then targeted for census awareness activities. In addition to liaising with Aboriginal organisations in the area, CFOs were encouraged to make direct contact with Aboriginal community councils and community members by arranging meetings and seminars.

This overall strategy is considered to have been particularly effective in raising the level of awareness about the census among Aboriginal people in non-metropolitan urban centres and rural areas. In those areas, Aboriginal organisations interact more closely with their communities than do their counterparts in metropolitan areas where the Aboriginal population is far more dispersed.

2.4. Data processing

In the 1986 Census, direct key-entry of data from collection forms replaced the 1981 procedure of manual transcription from collection forms to optical mark readable (OMR) forms for machine reading.

For remote area interview forms the 1981 Census had involved an additional stage, when responses were initially transcribed on to standard household forms before undergoing the general transcription to machine-readable forms. The initial transcription was carried out in the ABS Western Australian, South Australian and Northern Territory offices of ABS. Not only did this involve an extra transcription phase with its associated potential for errors but it also permitted greater inconsistency in the clerical process than is likely to occur in a central processing operation.

The elimination of both stages of manual transcription as performed on the 1981 remote area forms should have enhanced the quality of these Aboriginal data in 1986. As well as this, several significant changes were made to the coding procedures for the 1986 Census.

First, persons who did not respond to the Aboriginal origin question were, where possible, imputed to 'Aboriginal', 'Torres Strait Islander' or 'not Aboriginal' on the basis of their responses to the ancestry question which was included for the first time in the 1986 Census. Those persons who stated their ancestry as 'Aboriginal' or 'Torres Strait Islander' were assigned to the appropriate category. Persons who reported an 'overseas' ancestry were assigned to 'not Aboriginal or Torres Strait Islander'. The remainder either classified themselves as 'Australian' or gave an inadequate response and were coded as 'not stated'.

Second, multiple responses to the Aboriginal origin question (i.e. where more than one box was ticked) were resolved in similar fashion. Those cases where this was not possible were coded to 'not stated' in respect of their origin. These were the only circumstances under which responses to the Aboriginal origin question were amended using responses to the ancestry question.

Editing procedures are another element of census processing which underwent significant change between the 1981 and 1986 censuses. In 1981 processing, an edit had been introduced requiring that all persons with both parents born overseas be coded to 'not Aboriginal or Torres Strait Islander' in the Aboriginal origin question. Even records with no response to the Aboriginal origin question were subject to this edit and the resulting imputation of non-Aboriginal responses produced an apparent non-response rate that was significantly lower than it otherwise would have been.

The corresponding edits in 1986 were applied only to persons who identified themselves as Aboriginals or Torres Strait Islanders (there were two edits, one for 'Aboriginals' and one for 'Torres Strait Islanders'). Records which failed the edit were not automatically amended but were examined on a case-by-case basis, other information on the census form such as birthplace, ancestry and language being used to confirm the person's origin.

An additional edit was introduced in 1986 to cover persons who identified themselves as either 'Aboriginal' or 'Torres Strait Islander' and reported their birthplace as 'other than Australia'. Records which failed this edit were also resolved case by case by senior processing staff in the Data Transcription Centre. Care was taken to preserve reported Aboriginal origin data in all those cases where reported origin was supported by other information on the forms.

The edit and imputation rules applied to the processing of Aboriginal origin data in 1981 and 1986 had substantially different effects on the resulting data. Although an unknown, but likely to be small, number of apparently incorrect Aboriginal responses were assigned to the 'not Aboriginal' category in 1981, a more important effect of the 1981 procedures was to impute 'non-Aboriginal' responses where none had been given thereby leading to a reduction of the apparent non-response rate.

The 1986 procedures had two effects. First, the introduction of the new edits together with the modified 1981 edit using birthplace of parents represented a more comprehensive approach to the possible combinations of responses to the Aboriginal origin, birthplace and birthplace of parents questions. For example, a person-record with Torres Strait Islander origin, a birthplace of Italy, one parent also born in Italy and the other parent's birthplace not stated would have been detected by two edits in the 1986 Census data processing system and examined on a case-by-case basis. In 1981 such a record would have passed through data processing without a query being raised.

Second, some non-respondents to the Aboriginal origin question were assigned to the categories 'Aboriginal', 'Torres Strait Islander' or 'not Aboriginal' by imputing from ancestry responses during the data coding process. The number of imputed responses to the Aboriginal origin question on the basis of ancestry responses was not recorded by the processing system.

The limited information gathered during processing about failure rates for the 'Aboriginal with overseas-born parents' edit indicates that a negligible number of incorrect Aboriginal responses were detected by this edit. No error rate information is available for the other edits.

A review of transcription procedures in the 1981 Census raised the possibility that a proportion of Aboriginal responses may have been mistakenly classified to the more commonly occurring response of 'not Aboriginal' during the OMR transcription stage of data processing. While there is no evidence that this was a significant problem a 'check total' box was introduced to the front of the 1986 Census forms to help preserve the accurate capture of responses to the Aboriginal origin question. Coders were instructed to enter the total number of Aboriginals in each household in this box, providing the basis for an automatic check applied during editing against the responses recorded to the Aboriginal origin question for household members.

Overall, we can be confident that in 1986, recorded Aboriginal responses were preserved through the data processing system to a greater extent than in previous censuses.

3. EVALUATION OF DATA QUALITY

3.1. Underenumeration

While the population census remains the only comprehensive source of data on the Aboriginal population collected on a national basis, it should be noted that census coverage of Aboriginals is not complete. Like the total population, counts of Aboriginals are subject to some degree of underenumeration.

One potential source of information about underenumeration of Aboriginals is the 1986 Census Post Enumeration Survey (PES), details of which are published in *Census 86: Data Quality - Undercount (2607.0)*.

As explained in that publication, underenumeration rates derived from the PES are subject to both sampling and non-sampling errors. Because underenumeration is a fairly rare event a large sample is needed in order to be able to estimate the underenumeration rate accurately. However only about a thousand persons included in the 1986 Census PES were identified as Aboriginals, so that the sampling errors for estimates of Aboriginal underenumeration derived from this source are relatively large.

Another problem is the inconsistency in identification of Aboriginals between the PES and the census. This is considered to arise primarily from the different method used in the PES (interview) compared to the census (self-enumeration). The extent of the inconsistency substantially limits the usefulness of estimates of the undercount of Aboriginals from the PES. However, the PES can still be used to give an indication of census undercount, and both the 1986 Census PES and the 1981 Census PES showed a higher underenumeration rate for persons identified in the survey as Aboriginal, than for other persons.

In 1986 another study was undertaken in an effort to better gauge the accuracy of Aboriginal enumeration. This was the Aboriginal Evaluation Study (AES), aimed at determining whether the underenumeration rate for a selected sample of Aboriginals differed significantly from the underenumeration rate for a control group. The method employed in the AES involved using Aboriginal persons to facilitate the interview process and matching the study records with the corresponding census records for those persons included in the study. In the AES there was little of the inconsistency in identification which affects the reliability of estimates of underenumeration from the PES.

Consideration of the 1981 Census Aboriginal counts had highlighted anomalies in urban areas, and because of this the eight study areas chosen for the AES were located in Sydney and Melbourne and several provincial centres of New South Wales and Victoria. The households in the Aboriginal sample groups were chosen from lists used for administrative purposes in the two States. The households selected for inclusion in the control groups were located in the same neighbourhoods as the Aboriginal groups so as to minimise the effect of factors directly attributable to geographic location on comparisons between the two groups. In the event, a significant number of non-Aboriginal households were included in the selected 'Aboriginal' sample groups, mainly because administrative lists of the kind used can become out-of-date fairly rapidly. It is important to note that, because of the purposive sampling method used in the AES, its results cannot be generalised to other sections of the Aboriginal population.

Although the study indicated a significantly higher underenumeration rate for Aboriginals than for non-Aboriginals (8 per cent and 3 per cent respectively), it also indicated significantly different underenumeration rates for non-Aboriginals in the two groups (13 per cent in the 'Aboriginal' sample and 1 per cent in the control group). In other words there appear to be underlying factors other than Aboriginal origin which may have been at least as important in determining how well different categories of persons in the study were enumerated. The design of the AES does not permit any more detailed analysis of these factors.

In summary, both the PES and the AES have deficiencies as indicators of Aboriginal underenumeration. In the case of the PES, these deficiencies do not permit actual estimates to be provided for Aboriginals even though both the 1981 and 1986 PESs indicate that persons identifying as Aboriginals had a higher rate of underenumeration than others. This indication is supported by the results of the AES. However, as is indicated by the AES, both sets of results may reflect factors other than Aboriginal origin (such as housing, employment or household size) which could be just as important or more important than Aboriginal origin itself in determining coverage levels.

3.2. Non-response

Although the Aboriginal origin question is required to be answered for all persons, there is a certain amount of non-response to the question. In addition to answers actually missing, the apparent non-response rate is also affected by actions undertaken during processing.

This has been the case in both the 1981 and 1986 Censuses with the apparent non-response rates for the Aboriginal origin question in both censuses being reduced by actions taken during office processing. More details of the processing actions taken are contained in section 2.4, but the magnitude of their effects was not recorded. All that is available are 'apparent' non-response rates and these are presented for 1981 and 1986 in Table 1.

TABLE 1. RECORDED NON-RESPONSE TO ABORIGINAL ORIGIN QUESTION

	1981 Census	1986 Census
New South Wales	3.9	1.8
Victoria	3.6	2.1
Queensland	4.4	1.5
South Australia	3.1	1.2
Western Australia	3.2	1.4
Tasmania	5.0	1.5
Northern Territory	6.5	3.6
Australian Capital Territory	2.4	1.1
Australia	3.8	1.7

Given the lack of comparability due to changes in office processing procedures between the two censuses, not much can be made of comparisons between the two sets of results. The final outcome for 1986, though, is an extremely low non-response rate for each State and the ACT. A high non-response rate for the NT is a feature of many other census questions and the result shown for NT in the table is not remarkable in that context. Variations across section of State categories are not large and show no systematic pattern.

In the past, the level of non-response to the Aboriginal origin question has been cited as a potential source of inaccuracy in census Aboriginal counts. This is because the total number of persons not responding to the question has hitherto been several times larger than the Aboriginal count. The possibility that the 'not stated' category may have contained large numbers of undisclosed Aboriginals was mooted after the 1981 Census, when a drop in the Aboriginal count was recorded for several States and Territories. However, both the 1981 and 1986 Census Post Enumeration Surveys have demonstrated that the propensity of Aboriginal persons not to respond to the Aboriginal origin question is little different from that of the rest of the Australian population.

Given that only a relatively small number of Aboriginal persons does not respond to the Aboriginal origin question, intercensal changes of the scale observed in Aboriginal counts cannot be explained by shifts between the 'not stated' category and the 'Aboriginal' or 'Torres Strait Islander' category.

3.3. Consistency with other census data

The inclusion of the ancestry question in the 1986 Census permitted an internal consistency check (albeit a qualified one) to be made with the ancestry responses of persons who identified themselves as Aboriginals or Torres Strait Islanders in the Aboriginal origin question. The qualification is due principally to the nature of the ancestry question and its underlying concept, which is different from that of the Aboriginal origin question.

The ancestry question was worded as follows :

<p>15. What is each person's ancestry?</p> <ul style="list-style-type: none"> • For example, Greek, English, Indian, Armenian, Aboriginal, Chinese etc. 	<p>Ancestry</p> <p>.....</p> <p>.....</p> <p>.....</p> <p><input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p>
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In the information booklet distributed to all households, respondents were advised that:

'Ancestry' means the ethnic or national group from which you are descended. It is quite acceptable to base your answer on your grandparents' ancestry. Persons of mixed ancestry who do not identify with a single group should answer with their multiple ancestry. Persons who consider their ancestry to be Australian may answer 'Australian'.

The level of correspondence found between 'Aboriginal' and 'Torres Strait Islander' responses in the Aboriginal origin question and appropriate ancestry responses, is indicated in Table 2 below. Although up to two ancestry responses were coded during census processing, only first ancestry responses are used in the table.

TABLE 2. ANCESTRY RESPONSES^(a) OF PERSONS IDENTIFIED AS ABORIGINALS OR TORRES STRAIT ISLANDERS, 1986 CENSUS
Per cent

	<i>Aboriginal/TSI</i>	<i>Australian</i>	<i>Other^(b)</i>	<i>Total</i>
New South Wales	78.1	9.2	12.7	100.0
Victoria	66.9	13.1	20.0	100.0
Queensland	81.0	7.0	12.0	100.0
South Australia	81.9	7.7	10.4	100.0
Western Australia	83.9	9.5	6.6	100.0
Tasmania	60.1	13.5	26.4	100.0
Northern Territory	93.8	2.8	3.4	100.0
Australian Capital Territory	75.6	9.2	15.2	100.0
Australia	81.3	7.9	10.8	100.0

(a) First responses only. Approximately 10 per cent of Aboriginal persons reported more than one ancestry response. (b) Excludes 'not stated' and unclassifiable responses. About half of all responses in the 'other' category were 'English'.

In considering the results in Table 2, it should be noted that virtually any ancestry response could be legitimate for a person of Aboriginal origin. There would be nothing remarkable about an Aboriginal person describing their ancestry as 'Australian', and it would be just as appropriate for a person of some Aboriginal origin describing their ancestry in terms related to a non-Aboriginal forebear, e.g. 'English'. The differing degrees of association between the responses to the Aboriginal origin and ancestry questions between States and Territories probably reflects differences in the degree of homogeneity in State and Territory Aboriginal populations. The high 'other' category for Tasmania in Table 2 is particularly interesting in the light of indications of Bass Strait Islanders being mistakenly identified as Torres Strait Islanders (see section 3.6).

Given these qualifications, the fact that the table shows over 91 per cent of persons of Aboriginal origin describing their ancestry as 'Aboriginal', 'Torres Strait Islander' or 'Australian' can be regarded as some corroboration of the Aboriginal origin data from the census.

3.4 Demographic composition

The count of Aboriginals in the 1986 Census was 227,645 compared with 159,897 enumerated in the 1981 Census, representing an increase of over 42.4 per cent. For the increase in the count to be explained by demographic factors alone would imply an unprecedented average annual rate of natural increase of 7.1 per cent for the five years, given that the Aboriginal population is not affected to any significant extent by overseas migration. Research into Aboriginal vital statistics suggests that natural increase in the Aboriginal population had slowed from an annual rate of around 2.5 per cent in the 1960s to below 2.0 per cent at the end of the 1970s³.

While it is clear that other non-demographic factors of varying influence have contributed to the increase in the Aboriginal counts between 1981 and 1986, demographic analysis of the 1986 Census data gives an important indication of the quality of the data.

TABLE 3. AGE DISTRIBUTION AND SEX RATIOS OF ABORIGINAL COUNTS, AUSTRALIA

Age group	1981 Census			1986 Census		
	<i>Males^(a)</i>	<i>Females^(a)</i>	<i>Sex ratio</i>	<i>Males</i>	<i>Females</i>	<i>Sex ratio</i>
	No.	No.	%	No.	No.	%
0 - 4	10,923	10,298	106.1	16,193	15,656	103.4
5 - 9	11,966	11,378	105.2	14,526	13,860	104.8
10 - 14	11,915	11,602	102.7	15,517	14,760	105.1
15 - 19	9,828	9,750	100.8	14,475	14,631	98.9
20 - 24	7,733	7,966	97.1	11,847	12,197	97.2
25 - 29	5,947	6,267	94.9	9,405	10,075	93.3
30 - 34	4,618	5,227	88.3	7,410	7,942	93.3
35 - 39	3,815	3,977	95.9	5,912	6,496	91.0
40 - 44	3,152	3,394	92.9	4,553	4,845	94.0
45 - 49	2,625	2,755	95.3	3,500	3,907	89.6
50 - 54	2,178	2,314	94.1	2,813	3,071	91.6
55 - 59	1,543	1,541	100.3	2,168	2,362	91.8
60 - 64	1,294	1,365	94.6	1,578	1,901	83.0
65 +	2,190	2,345	93.5	2,758	3,287	83.9
Total	79,722	80,175	99.4	112,655	114,990	98.0

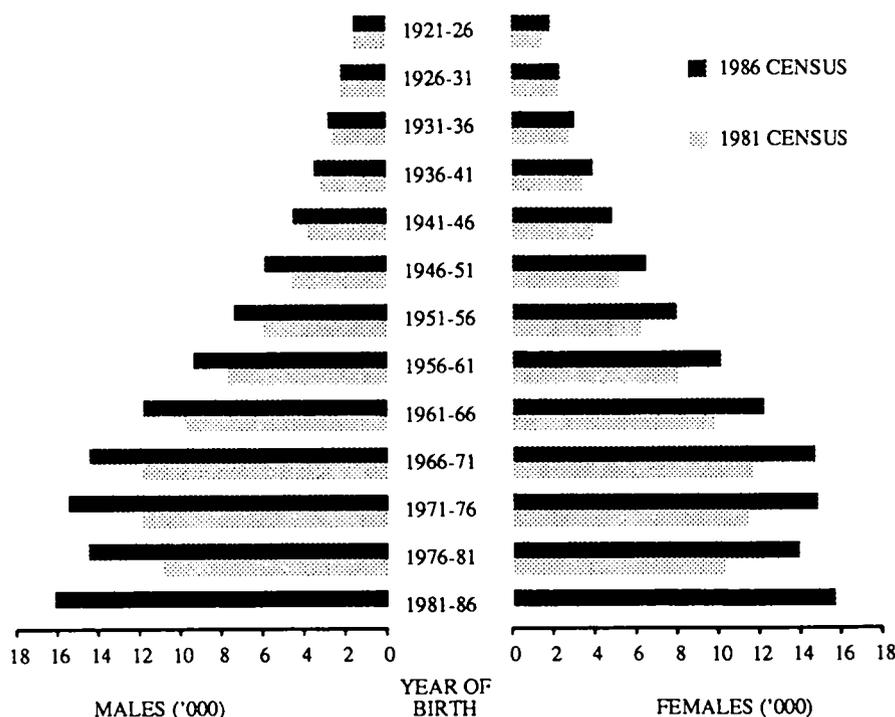
(a) Components do not add to totals because of introduced random adjustments (see Explanatory Notes).

³ Gray A. and Smith L.R., 'The size of the Aboriginal population', *Australian Aboriginal Studies*, 1983, Number 1, pp.2-9.

Table 3 shows the sex ratios (see Explanatory Notes) for five-year age groups in the total Aboriginal population counted for Australia in the 1981 and 1986 Censuses. The data for both censuses generally conform to the expected pattern of a gradual decline with advancing age, commencing from a ratio of around 105 for the 0-4 years age group. A feature of these data is that the sex ratio is generally lower in the 1986 Census than in the 1981 Census for those five-year age cohorts enumerated in both censuses (in the table, 0-4 year olds in 1981 become 5-9 year olds in 1986). This trend may be due to sex differences in mortality, enumeration and/or identification between the two censuses.

Figure 1 depicts the age-sex structure of the Aboriginal population counted in the 1981 and 1986 Censuses for Australia in total. The graph is arranged in such a way that counts from the two censuses for each five-year birth cohort have been bracketed together for easier comparison of the two census results. Those persons born between the censuses and enumerated as Aboriginals are shown in the bottom bar of the graph.

FIGURE 1: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS AUSTRALIA



Several features of the above graph are worth noting. First, the increased count in 1986 is spread over almost all age groups of the population aged five and over for both sexes. Second, the age distribution of the population enumerated in 1986 does not display any major structural anomalies at this level of aggregation. Third, there is a relatively good level of correspondence between the two census counts in terms of the overall shape of the pyramid and the relationships between consecutive cohorts. The 1981 population pyramid narrows at the base due to a relatively small 0-4 years birth cohort (shown here as those born in the period 1976-81). This pattern is clearly echoed by the same year of birth group in the 1986 population pyramid.

By contrast, the cohort of 0-4 year olds enumerated in the 1986 Census (i.e. those born in the period 1981-86) is not contracted, and is of particular importance to the future demographic structure of the Aboriginal population. One factor involved in the relative broadening of the Aboriginal population base between 1981 and 1986 is the 'population momentum' effect of the large cohorts born in the 1960s entering the peak child-bearing ages in the 1980s. This can be expected to result in significantly larger birth cohorts through the 1980s. A further consideration is that the rates of underenumeration of young Aboriginal children may be different in the 1981 and 1986 Censuses.

Evidence presented in section 3.7 (see Table 11) shows that, while reconciling reasonably well with non-census data, the 1986 Census counts of Aboriginals aged 0-4 years for Western Australia and the Northern Territory are still likely

to reflect some understatement of actual numbers. Attempts at similar reconciliations between 1981 Census counts and non-census data indicated even larger undercounts in the census data for the 0-4 year age group.

The increase in 0-4 year olds between the 1981 and 1986 Censuses does not appear to reflect an increase in fertility. A crude estimate of fertility which can be obtained from census data is the child-woman ratio (see Explanatory Notes). All other things being equal, this ratio can be expected to rise with increasing fertility and vice versa. In fact, the child-woman ratio for the Aboriginal population as a whole fell marginally from 53.9 in 1981 to 53.0 in 1986. Nor is there evidence in the data of a significant increase in Aboriginal fertility in any of the States or Territories.

The other demographic factor which may have contributed to the large 0-4 cohort in 1986 is a decrease in infant and child mortality. However, available data on the Aboriginal population indicate that the infant mortality rate remained relatively stable during the period 1981 to 1986⁴.

As portrayed in Figure 1, the age-sex structures of the Aboriginal population in the 1981 and 1986 Censuses are broadly similar. This picture is borne out in Table 4 which lists the proportions of the Aboriginal population contained in five year age groups, by sex, for the 1981 and 1986 Censuses. Apart from some expected variability evident for young age groups (given the preceding discussion about 0-4 year olds), the age profiles of the Aboriginal population at the two census dates are very similar.

TABLE 4. AGE DISTRIBUTION OF ABORIGINAL COUNTS : AUSTRALIA
Per cent

Age group	Males		Females	
	1981 Census	1986 Census	1981 Census	1986 Census
0 - 4	13.7	14.4	12.8	13.6
5 - 9	15.0	12.9	14.2	12.1
10 - 14	15.0	13.8	14.5	12.8
15 - 19	12.3	12.9	12.2	12.7
20 - 24	9.7	10.5	9.9	10.6
25 - 29	7.5	8.4	7.8	8.8
30 - 34	5.8	6.6	6.5	6.9
35 - 39	4.8	5.3	5.0	5.7
40 - 44	4.0	4.0	4.2	4.2
45 - 49	3.3	3.1	3.4	3.4
50 - 54	2.7	2.5	2.9	2.7
55 - 59	1.9	1.9	1.9	2.1
60 - 64	1.6	1.4	1.7	1.7
65 +	2.8	2.5	2.9	2.9
Total	100.0	100.0	100.0	100.0

Combined 1981 and 1986 age-sex structure pyramids for all States and Territories appear in Appendix A. As those graphs show, in Queensland, Western Australia and the Northern Territory the age groups which experienced increased counts were confined to those around fifty years of age or less. Increased counts were recorded in almost all age groups in the other States and the Australian Capital Territory.

The above analysis has concentrated on comparing the structure of the 1986 Census counts with that of the 1981 counts. Demographic analysis can also be used to derive an estimated 1986 Aboriginal population based entirely on the 1981 Census counts and 'natural increase' (the latter based on life tables, fertility rates and child mortality rates relating specifically to the Aboriginal population⁵). If that is done, the estimate derived for Australia at 30 June 1986 is approximately 174,000, more than 50,000 below the 1986 Census count. Given that overseas migration has a negligible effect on the Aboriginal population this result has important implications for understanding the intercensal movement between 1981 and 1986. This is discussed in Chapter 4.

⁴ Commonwealth Department of Health, *Health Statistical Supplement*, 1986-87.

⁵ Gray A., unpublished Ph.D. thesis.

3.5. Geographic distribution

Any evaluation of census counts of Aboriginals, and especially of the intercensal movements they reveal, needs to examine the State and Territory distribution of the counts. When this is done for a number of censuses some very clear patterns emerge to cast light on the reliability of the data.

This section presents a geographic analysis of Aboriginal counts in the past four censuses and intercensal changes in the enumerated Aboriginal population, to determine the extent of geographic variation in the changes which have occurred over that period. As the following tables demonstrate, there is wide variability between the States and Territories in the size of movements in the enumerated Aboriginal populations from one census to another. Closer examination, however, reveals that the States and Territories can be separated into two groups, within each of which there is a great deal more consistency in intercensal movements.

This is clearly demonstrated in the following two tables showing census counts and intercensal movements over the past four censuses by State and Territory.

TABLE 5. ABORIGINAL COUNTS BY STATE AND TERRITORY

<i>State/Territory</i>	<i>1971 Census</i>	<i>1976 Census</i>	<i>1981 Census</i>	<i>1986 Census</i>
New South Wales	23,873	40,450	35,367	59,011
Victoria	6,371	14,760	6,057	12,611
Queensland	31,922	41,345	44,698	61,268
South Australia	7,299	10,714	9,825	14,291
Western Australia	22,181	26,126	31,351	37,789
Tasmania	671	2,942	2,688	6,716
Northern Territory	23,381	23,751	29,088	34,739
Australian Capital Territory	255	827	823	1,220
Australia	115,953	160,915	159,897	227,645

TABLE 6. ABORIGINAL COUNTS: INTERCENSAL CHANGES BY STATE AND TERRITORY
Per cent

<i>State/Territory</i>	<i>1971-76</i>	<i>1976-81</i>	<i>1981-86</i>
New South Wales	69.4	-12.6	66.9
Victoria	131.7	-59.0	108.2
Queensland	29.5	8.1	37.1
South Australia	46.8	-8.3	45.5
Western Australia	17.8	20.0	20.5
Tasmania	338.5	-8.6	149.9
Northern Territory	1.6	22.5	19.4
Australian Capital Territory	224.3	-0.5	48.2
Australia	38.8	-0.6	42.4

A dichotomy of States and Territories is apparent in the data presented in Tables 5 and 6. While Queensland, Western Australia and the Northern Territory experienced increases in Aboriginal counts in all three intercensal periods, figures for the remaining States and Territory show a more varied pattern of movement. All four States and the Territory in the second group experienced very large increases in Aboriginal counts during the periods 1971-76 and 1981-86 punctuated by negative change in 1976-81. For this group (comprising New South Wales, Victoria, South Australia, Tasmania and Australian Capital Territory), intercensal changes were generally much greater than they were for the first group.

To see whether interstate migration could be a significant factor in explaining this variability, the responses for Aboriginals aged five years and over to the question on usual residence five years ago in the 1986 Census were examined. The results are shown in Table 7.

TABLE 7. STATE/TERRITORY MIGRATION FLOWS(a) OF ABORIGINALS
FIVE YEARS OF AGE AND OVER, 1981 to 1986

State/Territory	In-migration		Out-migration		Net gain/loss	
	No.	No.	No.	No.	% of 1986 count	
New South Wales	2,203	2,343	-140		0.4	
Victoria	1,066	1,025	41		0.3	
Queensland	2,372	2,309	63		0.1	
South Australia	1,164	890	274		1.9	
Western Australia	980	1,131	-151		0.4	
Tasmania	318	234	84		1.3	
Northern Territory	1,388	1,293	95		0.3	
Australian Capital Territory	415	335	80		6.6	

(a) As indicated by responses to the *Usual residence five years ago* question in the 1986 Census.

These data indicate a net movement of Aboriginals into or out of each State or Territory in the period between the 1981 and 1986 Censuses that is small (averaging less than 1 per cent of the 1986 counts) for all States and Territories except the ACT. The corresponding figure for the small ACT Aboriginal population was 6.6 per cent. Such movements are too small to be significant in the context of the 1981-1986 intercensal change. Nor is it likely that interstate migration has been large enough to have had a significant impact on other intercensal movements in Aboriginal counts during the period in question.

When the census counts are analysed by section of State another pattern emerges with movements being generally greater and more variable in urban areas than in rural areas.

The distribution of the Aboriginal count for Australia by section of State (see Explanatory Notes for definition) in the last four censuses is shown in Table 8 below. Changes in the distribution of the Aboriginal population between the three categories shown in the table have followed a fairly consistent trend over the period covered. Despite the slight growth in the rural share between the 1976 and 1981 Censuses the proportion of Aboriginals counted in rural areas has fallen from 55.7 per cent in 1971 to 33.5 per cent in 1986.

TABLE 8. ABORIGINAL COUNTS BY SECTION OF STATE, AUSTRALIA

Section of State	1971 Census		1976 Census		1981 Census		1986 Census	
	No.	%	No.	%	No.	%	No.	%
Major urban	17,332	(14.9)	42,187	(26.2)	31,546	(19.7)	55,537	(24.4)
Other urban	34,076	(29.4)	53,669	(33.4)	61,793	(38.6)	95,879	(42.1)
Rural	64,545	(55.7)	65,059	(40.4)	66,558	(41.6)	76,229	(33.5)
Total	115,953	(100.0)	160,915	(100.0)	159,897	(100.0)	227,645	(100.0)

What the examination of data in this section has shown to date is that there is far greater consistency in counts for rural areas and for those States and Territories with large rural Aboriginal populations than there is for urban areas or for the States and Territories with largely urban Aboriginal populations.

Another perspective on the urban/rural distribution of Aboriginals is obtained by examining the intercensal changes in counts by section of State categories, and this is done in Table 9.

While increases were recorded in all categories for all States and Territories except rural Western Australia and rural ACT, growth in the combined urban categories outstripped that in rural areas everywhere except in the Northern Territory (where 69.2 per cent of Aboriginals are located in rural areas).

Appendix B contains a table of Aboriginal counts by State and section of State.

TABLE 9. ABORIGINAL COUNTS: INTERCENSAL CHANGES BY SECTION OF STATE
Per cent

1981 to 1986				
State/Territory	Section of State (a)			Total
	Major urban	Other urban	Rural	
New South Wales	90.7	69.6	27.9	66.9
Victoria	110.5	116.6	74.9	108.2
Queensland	70.0	57.2	7.7	37.1
South Australia	77.1	49.4	13.4	45.5
Western Australia	38.2	40.0	-4.0	20.5
Tasmania	121.5	166.4	144.5	149.9
Northern Territory	—	15.0	21.5	19.4
Australian Capital Territory	61.7	—	-1.7	48.2
Australia	76.1	55.2	14.5	42.4

(a) See explanatory notes for definitions.

Table 9 shows that Aboriginal counts in major urban areas increased by 76.1 per cent between 1981 and 1986. To express the outcome another way, 85.7 per cent of the additional 67,748 Aboriginals counted in 1986 were accounted for in the urban categories. As depicted by the 1986 Census, the Aboriginal population of all States and Territories except the Northern Territory is predominantly urbanised; 66.5 per cent of the Aboriginal population were enumerated in urban areas in 1986 compared with 44.3 per cent in the 1971 Census.

This result appears to be indicative of a long-term trend towards increased urbanisation of the Aboriginal population, although other factors may be involved in this apparent shift in the location of the Aboriginal population. For example, geographic variations in self-identification may well have contributed to this outcome, and this possibility is discussed further in section 4.

What this section of the paper has demonstrated is that the 1981-1986 change in Aboriginal counts was contributed to by substantial increases in all States and Territories even though the movement was far greater in some States and Territories than in others. Similarly, increases were recorded in the counts of Aboriginals for each section of State category.

Overall, a geographical breakdown of the past two census results yields two interesting insights into the 1986 counts of Aboriginals. Firstly, the analysis confirms a continuing trend towards urbanisation of the Aboriginal population indicated by previous census results. Secondly, it shows that the greater part of the increase in Aboriginal numbers reflected in the 1986 counts is to be found in urban areas across the country and in those States and Territories whose Aboriginal populations are substantially located in urban areas.

In the concluding section of this paper (Chapter 4), reference is made to the possible significance of the urban/rural distribution of intercensal movements in evaluating Aboriginal counts. In the meantime, the geographical distribution of the 1981-1986 change in Aboriginal counts gives no indication that the 1986 counts were unduly affected by systematic enumeration or coverage problems affecting a particular State or other region in the country.

3.6. Torres Strait Islander counts

While the Torres Strait Islander population is generally considered to be a component of the Aboriginal population in official statistical collections, several aspects of Torres Strait Islander census counts warrant separate analysis.

Table 10 provides counts of Torres Strait Islanders for the States, Territories and Australia for the 1981 and 1986 Censuses, together with the percentage increases recorded over this period.

TABLE 10. TORRES STRAIT ISLANDERS: CENSUS COUNTS AND INTERCENSAL CHANGE 1981 TO 1986

State/Territory	1981	1986	Intercensal change 1981-86
	Census	Census	
	No.	No.	%
New South Wales	1,953	3,339	71.0
Victoria	774	1,871	141.7
Queensland	10,732	13,170	22.7
South Australia	349	993	184.5
Western Australia	602	679	12.8
Tasmania	354	887	150.6
Northern Territory	408	542	32.8
Australian Capital Territory	60	60	0.0
Australia	15,232	21,541	41.4

Many of the patterns observed in Torres Strait Islander census counts parallel those noted for the total Aboriginal/Torres Strait Islander population. Except in the ACT where the Torres Strait Islander count remained static, increased counts were recorded in all States and Territories over the period 1981 to 1986, and the magnitude of inter-censal population movements was in excess of the rate of natural increase. The count of Torres Strait Islanders for Australia increased by 41.4 per cent, virtually the same as for the entire Aboriginal/Torres Strait Islander population.

The Torres Strait Islander population is particularly susceptible to the effects of mis-identification. In the 1976 Census, approximately two thousand persons who were born in Europe identified themselves as Torres Strait Islanders. To correct this and related problems, an edit was introduced in the 1981 Census whereby all persons with both parents born overseas were assigned to the 'not Aboriginal or Torres Strait Islander' category (see section 2.4 for details).

The two edits which were applied to Torres Strait Islander census data in 1986 should have further improved the quality of the counts by removing a source of response error (see section 2.4) and by providing an effective means of examining person-records where anomalous responses to the birthplace and birthplace of parents questions were given.

One area of concern in the 1986 Census counts is the large number of Torres Strait Islanders enumerated in Victoria, South Australia and Tasmania. While no explanation has been found to account for the Torres Strait Islander counts for Victoria and South Australia, the high count for Tasmania is thought likely to have resulted from mis-identification by significant numbers of Aboriginals and others who formerly inhabited the Bass Strait Islands and their descendants. Although this group is now widely dispersed throughout Tasmania, they appear to have retained their identity as 'islanders' and mistakenly reported their origin as Torres Strait Islanders in the census.

An examination of the first ancestry responses of Tasmanian Torres Strait Islanders supports this explanation of the count. Of persons identifying themselves as Torres Strait Islanders in Tasmania, only 4 per cent claimed Torres Strait Islander ancestry compared with 31 per cent who reported their ancestry as Aboriginal. Of the remainder, the largest ancestry response categories were English (38 per cent), Australian (18 per cent) and Irish (2 per cent). The high proportion of 'English' responses to ancestry casts some doubt over the reliability of the Torres Strait Islander responses for Tasmania, even though it is not necessarily inconsistent with a higher-than-average proportion of persons having mixed English-Aboriginal origin.

Given the evidence of problems affecting counts of Torres Strait Islanders in 1986 and earlier censuses, census data for Torres Strait Islanders should be treated with some caution.

3.7 Comparison with non-census data

In view of the large changes that have occurred in Aboriginal counts between 1981 and 1986, corroboration of the 1986 Census counts with data from independent sources would be of great benefit if such data were available. Unfortunately, suitable alternative sources are difficult to find and none of those examined are comprehensive enough for Australia-wide comparisons to be made.

Comparisons with virtually all other sources of statistical data about Aboriginals are complicated by variations in reference dates, coverage and methods used to identify persons as Aboriginals. Despite these difficulties, and the absence of a single alternative source that is comprehensive enough for Australia-wide analysis, comparisons with some of the more rigorously compiled data from other sources have proved helpful in assessing the quality of the 1986 Census Aboriginal data.

The relationships between 1986 Census data and three of the most useful external sources of Aboriginal population data are discussed in the following paragraphs.

(i) *The National Schools Statistics Collection (NSSC)*

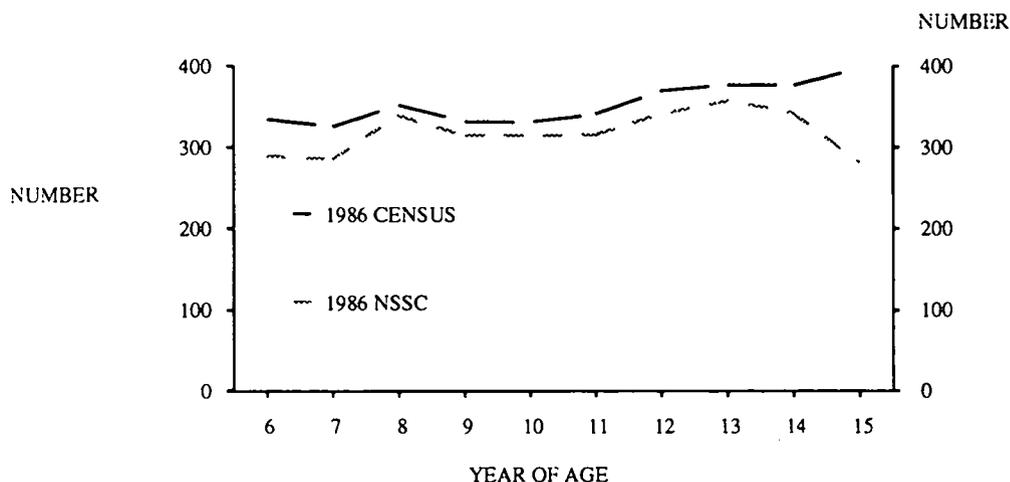
The comparison is restricted to data for South Australia because this is the only State or Territory for which age data on Aboriginal school students have been collected, processed and published for both the Government and non-Government school sectors.

A major difference between the population census and the NSSC is that the census counts as Aboriginals those who are identified on the census form (either by themselves or by other household members) as Aboriginal. In the NSSC, students are identified as Aboriginals by school staff in the majority of cases. The reference date for the 1986 School Census was 1 July 1986, the day following the date of the population census.

Because of the relatively high non-response rates to census education questions in general, but especially by Aboriginals, the NSSC data have been compared not with census responses to the question on Attendance at an Education Institution but with actual census counts of school age children.

The graph in Figure 2 shows counts of Aboriginals aged six to fifteen years taken from the 1986 Census and the 1986 National Schools Statistics Collection.

FIGURE 2: COMPARISON OF CENSUS AND NATIONAL SCHOOL STATISTICS COLLECTION (NSSC) DATA FOR ABORIGINALS SOUTH AUSTRALIA 1986



Comparisons between the data will be adversely affected if school enrolment of school age Aboriginal children is less than universal and this may be a particular problem at the beginning and end of the compulsory schooling years. This seems to be reflected in the wider gap seen in the graph at the beginning and end of the series. If the categories of six and fifteen years are disregarded the two data sets in the graph exhibit a high degree of correspondence with the schools collection data consistently falling short of the census data. The average discrepancy between the two data sets for age groups other than six and fifteen is eight per cent.

Altogether, the consistency of the two sets of data for almost all ages examined provides some degree of confidence in the quality of the 1986 Census Aboriginal counts for South Australia.

(ii) *Aboriginal Birth and Death Data : Western Australia and the Northern Territory*

The Aboriginal birth registration systems maintained in Western Australia and the Northern Territory permit a reconciliation to be made between 1986 Census counts of Aboriginals aged 0-4 years and estimates of 0-4 year olds derived from Aboriginal birth statistics and mortality data for the period 1981 to 1986.

Aboriginal births in Western Australia are recorded in the Midwives' Notification System which is maintained by the Health Department of Western Australia. The Northern Territory Health Department collects notifications of Aboriginal births and infant deaths. For both Western Australia and Northern Territory, estimates of deaths of Aboriginal infants and 0-4 year olds in the intercensal period (1 July 1981 to 30 June 1986) can be derived from monthly data obtained from the offices of Registrars-General, although in both cases these are generally considered to be understatements of actual Aboriginal deaths because of the difficulty of accurately attributing Aboriginality in many circumstances. When these are combined with births data for the same period the result is a set of alternative, albeit imperfect, estimates of 0-4 year olds to compare with the 1986 Census counts.

This has been done in Table 11 and the resultant discrepancies are moderate enough to give support to the census counts, especially when the observations following the table are taken into account.

TABLE 11. ABORIGINALS AGED 0-4 YEARS: COMPARISON OF ESTIMATES FROM ADMINISTRATIVE DATA SOURCES WITH 1986 CENSUS COUNTS

	Western Australia	Northern Territory
Recorded births (a) 1 July 81 to 30 June 86	5,825	5,119
Estimated deaths 0-4 year olds (b) 1 July 81 to 30 June 86	151	143
Estimated 0-4 year olds at 30 June 86	5,674	4,976
1986 Census count 0-4 years	5,348	4,826
Discrepancy	326	150
Discrepancy as a proportion of above estimate (%)	5.7	3.0

(a) From data collected by the State and Territory Health Departments. (b) Based on data from the State and Territory offices of Registrars-General.

In considering the discrepancies shown in the above table the previously mentioned deficiencies in records of deaths should be remembered. Researchers in the field have usually preferred to estimate Aboriginal deaths using life tables for the Aboriginal population⁶ and estimated infant mortality rates based on recent demographic trends. Infant mortality is the most variable and difficult to estimate component but using NT data of the early 1980s⁷ it has been variously estimated to be between 30 and 50 per 1000 live births. If the lower rate of 30 per 1000 is used for infant mortality the apparent differences between estimates from births and deaths data and 1986 Census counts for Aboriginal 0-4 year olds are lowered to 4.6 per cent for WA and 2.1 per cent for NT. Higher infant mortality rates would mean even smaller discrepancies.

The 0-4 age group has traditionally been one of the hardest parts of the Aboriginal population to measure reliably. Allowing for the disparities in collection methods and the known deficiencies in the administrative data sources, the above comparison offers encouraging support for the 1986 Census results in WA and NT, particularly when account is taken of likely underenumeration of the order discussed in Section 3.1. Although it cannot be generalised to other States there is no reason to believe that census enumeration for Aboriginals in this age group would be significantly worse elsewhere in Australia.

(iii) *Aboriginal Population Data : the Western Australian Community Health Services Register of Aboriginals*

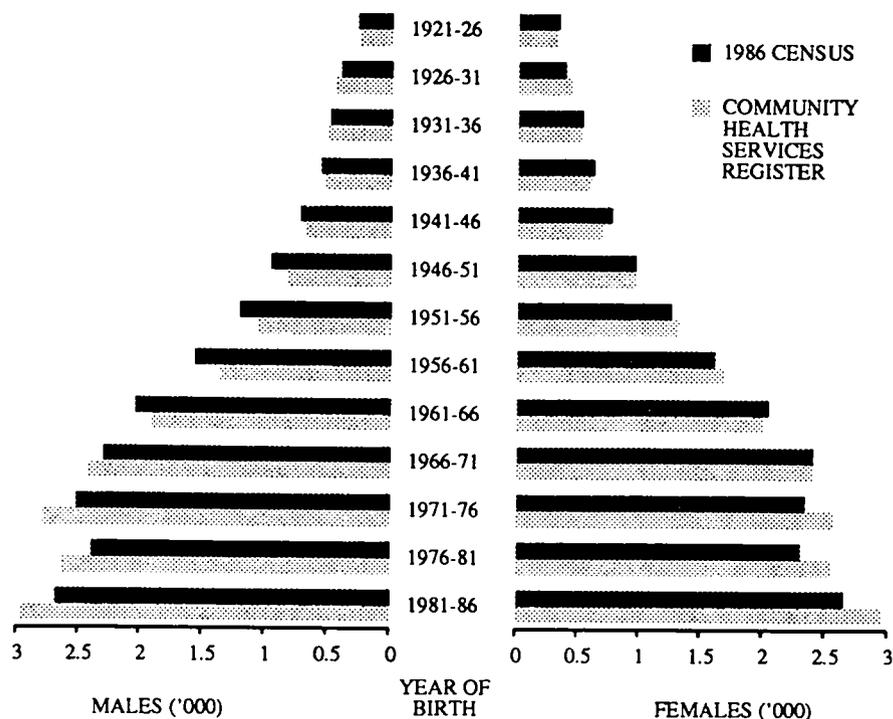
The Aboriginal Community Health Services register maintained by the Health Department of Western Australia lists Aboriginal clients who use the service. There are many ways in which records of this kind can fall short of being a reliable guide to the number of Aboriginals in an area, including both omissions and duplications. The Health Department has drawn attention to undercoverage of the register in two highly urbanised health regions (where a significant number of Aboriginals are not users of community health centres) and delays in amending records can contribute to both omissions and duplications. The net effect of various deficiencies of these kinds on the accuracy of the register can only be guessed at but the total counts revealed by the register generally exceed those from any other source. In addition to these deficiencies, comparisons with census data are affected by a difference in reference dates, register counts being for December 1986 and census counts being at 30 June 1986.

Overall, there is a difference of about 1500 (or 4 per cent) in aggregate numbers of Aboriginals between the two sources, although the reservations expressed above mean that no conclusion about the accuracy of census counts can be drawn from this. Of more analytical value is a comparison of the age-sex structures of the two counts and of the age-sex ratios that can be derived from them. Figure 3 shows a comparison of the two age-sex structures and Table 12 presents age-sex ratios for the two sets of data.

⁶ Gray A., unpublished Ph.D. thesis, op. cit.

⁷ Northern Territory Health Department, *Annual Report 1986-87*.

FIGURE 3: COMPARISON OF CENSUS AND COMMUNITY HEALTH SERVICES REGISTER DATA ON THE AGE-SEX STRUCTURE OF THE ABORIGINAL POPULATION 1986



For most age-sex groups shown in Figure 3 the differences are relatively small, but there is some variability both in the direction of the differences and in the differences in sex ratios. For males and females under 20 years, the Community Health register counts are consistently above corresponding counts from the census. Above that age there appears to be little discernible pattern in the differences by age group for females. The picture for males is different, with the register counts for males between 20 and 40 years being consistently below corresponding results from the census, probably reflecting a lower utilization of community health services by those groups.

An examination of the age-sex ratios in Table 12 shows anomalies in the same age groups i.e. 20 to 40 year olds, again indicating a probable undercoverage on the Community Health register of males in those age groups. Apart from those groups, the two series of age-sex ratios compare well.

TABLE 12. ABORIGINALS: WESTERN AUSTRALIA
COMPARISON OF SEX RATIOS BETWEEN THE 1986 POPULATION CENSUS
AND THE W.A. COMMUNITY HEALTH SERVICES REGISTER

Age group	1986 Census	Health Services Register
0 - 4	1.02	1.01
5 - 9	1.04	1.04
10 - 14	1.08	1.09
15 - 19	0.96	1.01
20 - 24	1.00	0.96
25 - 29	0.97	0.81
30 - 34	0.96	0.80
35 - 39	0.99	0.86
40 - 44	0.93	0.98
45 - 49	0.89	0.90
50 - 54	0.92	0.99
55 - 59	1.03	1.01
60 - 64	0.81	0.84
65 +	1.03	1.05

As with the other two external data sources referred to in this section, Community Health services data provide only a very limited basis for comparison with census data on Aborigines. Nevertheless, the analysis that has been possible lends support to the 1986 Census results.

Despite the incompleteness of the foregoing reconciliations, each of them has confirmed the relative accuracy of a part of the 1986 Census Aboriginal counts. Taken together, the best comparisons that can be made with external data sources give cause for confidence in the reliability of the 1986 Census results.

4. CONCLUSION

The analyses presented in Chapter 3 have attempted to assess the accuracy of the 1986 Census counts of Aboriginals. In the light of the results of this evaluation, we can be reasonably confident about the reliability of the census counts. There are, however, several factors affecting their accuracy which users of the Aboriginal counts will need to keep in mind.

One factor which affects all census data is census underenumeration. While the Post Enumeration Survey (PES) does not provide a reliable measure of the underenumeration rate for Aboriginals, it does indicate that persons identified as Aboriginals in the 1986 PES were underenumerated to a greater extent than other persons.

Before arriving at a satisfactory conclusion about the quality of 1986 Census data on Aboriginals, it is necessary to account for the very large increase in the count of Aboriginals between the 1981 and 1986 Censuses. In the preceding evaluation all but one of the potential contributing factors have been examined in detail and the findings are summarised below. The remaining factor to be considered is the potential effect of changes in people's inclinations to identify themselves and their households as Aboriginal. It is a factor which cannot be quantified and evidence of its role in the change in Aboriginal counts between censuses can only be circumstantial.

Clearly, the propensity to identify as Aboriginal in the context of a census is likely to be affected by a whole range of social and attitudinal factors which will vary significantly over time. Directing parts of the 1986 Census public awareness campaign towards Aboriginal enumeration is a reflection of the importance of attitudes of this kind. Thus the more effective the 1986 awareness campaign, the greater the likely disparity between the 1986 and previous census counts.

There are two ways that a shift in attitudes of this kind could influence the comparability of the 1981 and 1986 Census counts of Aboriginals. One way is through raising or lowering the numbers of Aboriginals actually being counted in a census. The population census is very dependent on public co-operation and the propensity to identify as Aboriginal could be associated with a preparedness to be included in the census. The other way is through more or fewer of those persons actually counted in both censuses being willing to identify as Aboriginals. Both of these effects are referred to in the discussions below on possible factors contributing to the large increase in counts between 1981 and 1986.

The first factor considered in comparing 1981 and 1986 Census counts is the possibility that the undercount might have changed significantly between the two censuses. A possible increase in the preparedness of Aboriginals to be included in the census associated with a change in the propensity to identify as such has been noted above. Changes to collection arrangements and public relations were also made to ensure that the maximum possible count of Aboriginals was obtained (see Chapter 2).

While these steps are considered to have been effective there are no objective measures of their effect. There are several limitations in the ability of the Post Enumeration Survey to measure the undercount of Aboriginals, and results from the survey do not provide evidence of any improvement.

A second potential cause of increased Aboriginal counts between 1981 and 1986 is a reduction in non-response to the Aboriginal origin question. However, it has been shown (in section 3.2) that only a very small proportion of Aboriginals fail to respond to this question in any census. Their numbers are too few to make a significant contribution to the change in counts between 1981 and 1986.

An important factor in intercensal movements in any population group is 'natural increase'. The magnitude of the demographic factors that go to make up 'natural increase' in the Aboriginal population can only be estimated, but section 3.4 shows their potential contribution to the change in counts between 1981 and 1986. It indicates that 'natural increase' could be expected to account for about 14,000 of the nearly 68,000 increase that occurred.

Then there are the changes made to processing methods between the two censuses (see section 2.4). However, even though the changes made for 1986 should have led to some increase in the numbers of Aboriginal responses accurately recorded, the effect on the difference between the two census counts could only have been minor.

This leaves only changes in identification (as Aboriginals) of persons who were counted in both censuses, to explain a large part of the growth observed between the 1981 and 1986 Census counts.

One indication that shifts in identification could be a major factor in intercensal changes in Aboriginal counts is that the greatest variability and the largest changes have been observed in urban areas and in those States with highly urbanised Aboriginal populations (see section 3.5). These are also the areas where the greatest changes in social climate and community attitudes are likely to have occurred. It is interesting to note that the U.S. Bureau of the Census has encountered indications of a similar shift in self-identification of indigenous peoples in the United States⁸.

In summary, the 1986 Census counts of Aboriginals are considered to be reliable. They do what they set out to do, which is to provide, as accurately as possible, data about those persons who are of Aboriginal or Torres Strait Islander origin and who identify themselves as such at the time of the census. The large increase shown between the 1981 and 1986 Censuses can be attributed to a number of factors, of which a shift in the propensity of people to record themselves and their households in the census as being Aboriginal is considered the main explanation for the magnitude of the 1981-1986 change.

⁸ Passel J.S. and Berman A., 'Quality of 1980 Census data for American Indians', U.S. Bureau of the Census, Washington, D.C., 1985.

EXPLANATORY NOTES

1. Introduction

All data in this publication are on a place of enumeration basis and are not comparable with census counts on a place of usual residence basis, or the estimated resident population figures released by the ABS. Census counts based on place of usual residence are available in other output products. A description of the two bases of enumeration and the estimated resident population can be found in *The 1986 Census Dictionary* (2174.0).

2. Scope and coverage

The 1986 Census of Population and Housing aimed at counting every person who spent census night, 30 June 1986, in Australia, including persons on vessels in or between Australian ports, or on board long-distance trains, buses or aircraft. All private dwellings were counted, whether occupied or unoccupied. Occupied non-private dwellings, such as hospitals, prisons, hotels, etc., were also included. People were counted where they were on census night, which may not have been where they usually lived. Place of usual residence was asked of each person, and answers, where they differed from enumeration address, were coded to Statistical Local Area (SLA). Visitors to Australia were enumerated regardless of how long ago they had arrived or how long they planned to stay. Australian residents out of the country on census night were excluded from the count.

Overseas diplomatic personnel and their families are out of the scope of the census, as are diplomatic residences.

3. Definitions

Census count - Place of Enumeration

Persons were counted where they were actually located on census night. Overseas visitors are included and Australians overseas are excluded. No adjustment is made for census underenumeration.

Sex ratio

The number of males per 100 females.

Child-woman ratio

The number of children under 5 years of age per 100 females aged 15 to 49.

4. Geographic areas

The geographic units used in this publication are States and Territories and section of State.

Section of State, within a State or Territory, represents an aggregation of non-contiguous geographic areas with particular urban or rural characteristics. The sections of State within each State or Territory are the following:

Major Urban - all urban centres with a population of 100,000 and over;

Other Urban - all urban centres with a population of 1,000 to 99,999 and known holiday resorts of less population if they contain 250 or more dwellings of which at least 100 are occupied on census night;

Rural - the remainder of the State/Territory.

For further details of these and other census geographic areas see the *Australian Standard Geographical Classification (ASGC)* (1216.0).

5. Data quality

Statistical collections such as the census are subject to a number of sources of error. While some errors defy detection and correction procedures, the number of errors in overall census results is generally insignificant.

Main sources of error in the census are:

- (a) *Underenumeration*. Despite efforts to obtain full coverage of persons and dwellings (other than those associated with overseas diplomatic missions), some undercounting still occurs. A measure of the extent of underenumeration is obtained from a survey of households undertaken very shortly after the census. This is the Post Enumeration Survey (PES) which will be discussed in detail in *Census 86: Data Quality - Undercount* (2607.0). Undercounting of persons in the 1986 Census was estimated to be 1.9 per cent for Australia as a whole (on a place of enumeration basis).
- (b) *Partial response*. In those instances where the householder omitted to provide a response to a question, a 'not stated' code was allocated; with the exception of non-response to age, sex, marital status and SLA of usual residence. These variables were imputed using other information on the census form and specially constructed random tables based on the distribution of the population according to these variables at the 1981 Census. In addition, variables such as Aboriginal origin and birthplace were imputed where the appropriate response was

clear from other information on the census form. Imputation of responses to the Aboriginal origin question is discussed in section 2.4.

- (c) *Respondent error.* Computer editing procedures are used to detect obvious errors made by individuals in completing the form (for example, a six year old person who was married). However such procedures cannot detect all respondent errors and some remain in final output.
- (d) *Processing error.* Errors created during the processing of the census are kept at an acceptable level by means of a quality control system which involves sample checking at different stages of the coding and keying operations, and taking corrective action where necessary.
- (e) *Introduced random adjustments.* Adjustments are made to table cells to allow the maximum of detailed census data to be released, while protecting the confidentiality of information about individual persons. For this reason, and since possible respondent and processing errors have greatest relative impact on small cells, no reliance should be placed on cells of three or less. For further information on sources of error, refer to the appropriate entries in *The 1986 Census Dictionary* (2174.0).

6. Further information

The ABS plans to release a number of papers evaluating the quality of data from the 1986 Census of Population and Housing. These include:

Census 86 : Data Quality - Ancestry (2603.0)

Census 86 : Data Quality - Families (2604.0)

Census 86 : Data Quality - Education (2605.0)

Census 86 : Data Quality - Undercount (2607.0)

For 1986 Census data on Aboriginals and Torres Strait Islanders refer to:

Census 86 - Aboriginals and Torres Strait Islanders: Australia, States and Territories (2499.0)

Further information about 1986 Census statistics is available from the nearest ABS office (see appendix C for addresses and telephone numbers).

7. Related ABS publications

Current publications produced by the ABS are listed in the *Catalogue of Publications, Australia* (1101.0). The ABS also issues, on Tuesdays and Fridays, a *Publications Advice* (1105.0) which lists publications to be released in the next few days. The Catalogue and Publications Advices are available from any ABS office.

8. Electronic services

VIATEL. Key *656# for selected current economic, social and demographic statistics.

AUSSTATS. Thousands of up-to-date time series are available on this ABS on-line service through CSIRONET. For further information phone the AUSSTATS Help Desk (062) 52 6017.

TELESTATS. This service provides foreign trade statistics tailored to users' requirements. Further information is available on (062) 52 5404.

Text and tables for selected Main Economic Indicator publications. Further information is available on (062) 52 5405.

9. Floppy disk services

Selected ABS statistics are available on floppy disk. For further information phone (062) 52 6684.

APPENDIX A

FIGURE 4: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS
NEW SOUTH WALES

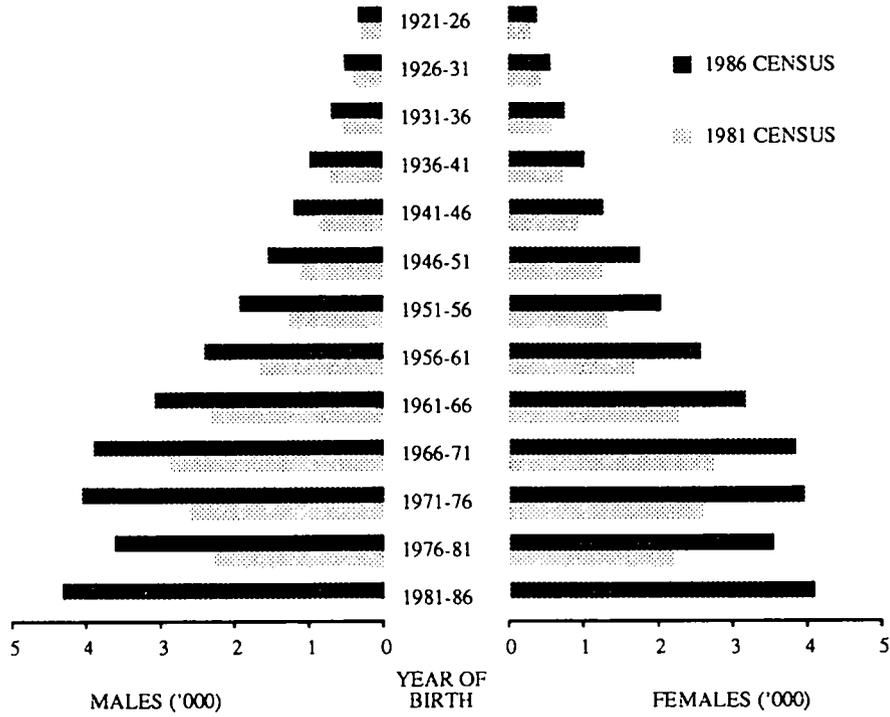


FIGURE 5: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS
VICTORIA

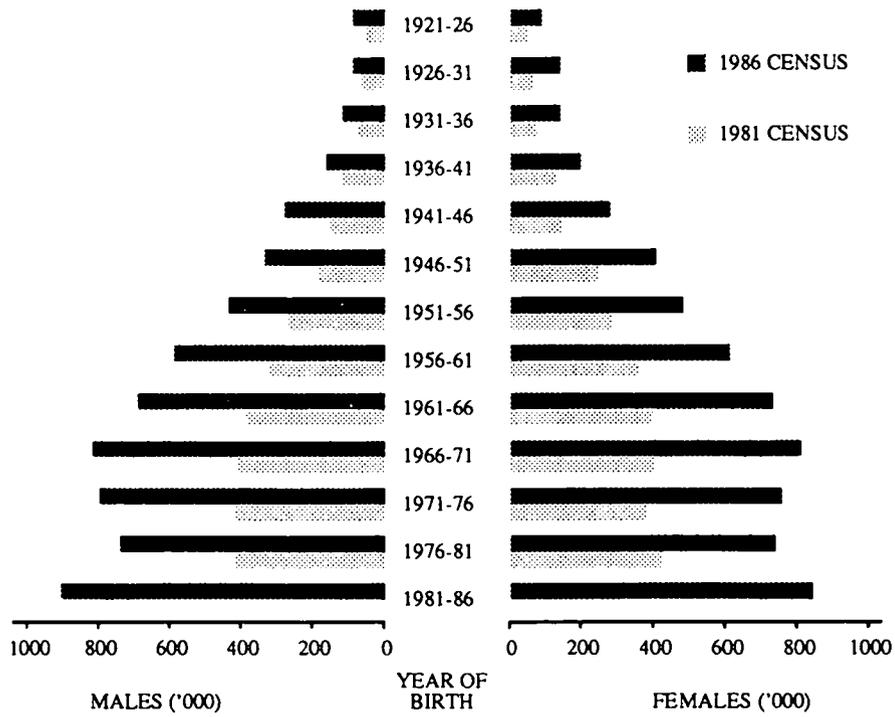


FIGURE 6: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS QUEENSLAND

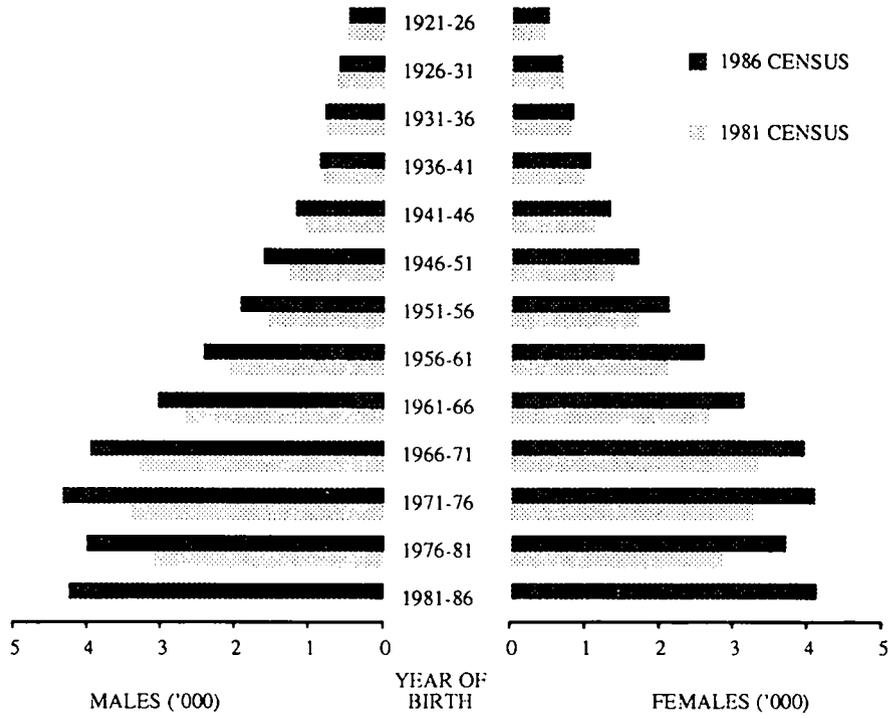


FIGURE 7: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS SOUTH AUSTRALIA

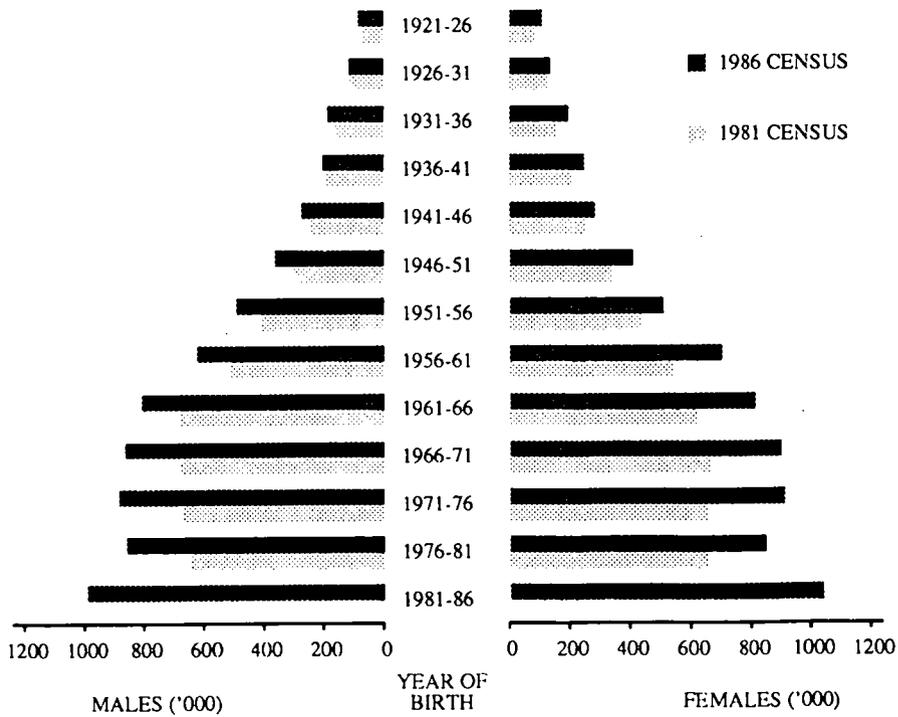


FIGURE 8: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS
WESTERN AUSTRALIA

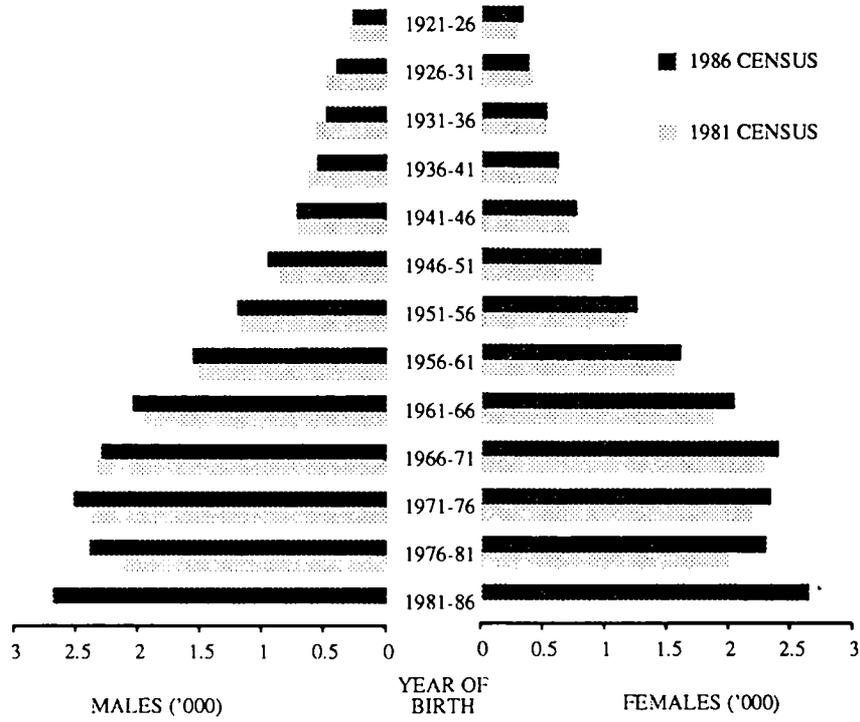


FIGURE 9: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS
TASMANIA

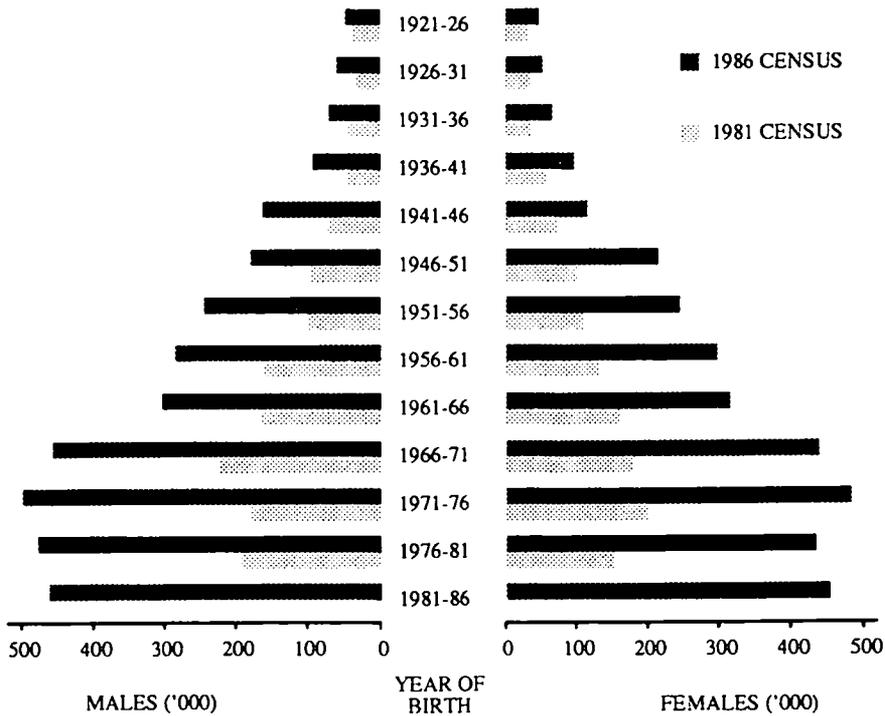


FIGURE 10: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS
NORTHERN TERRITORY

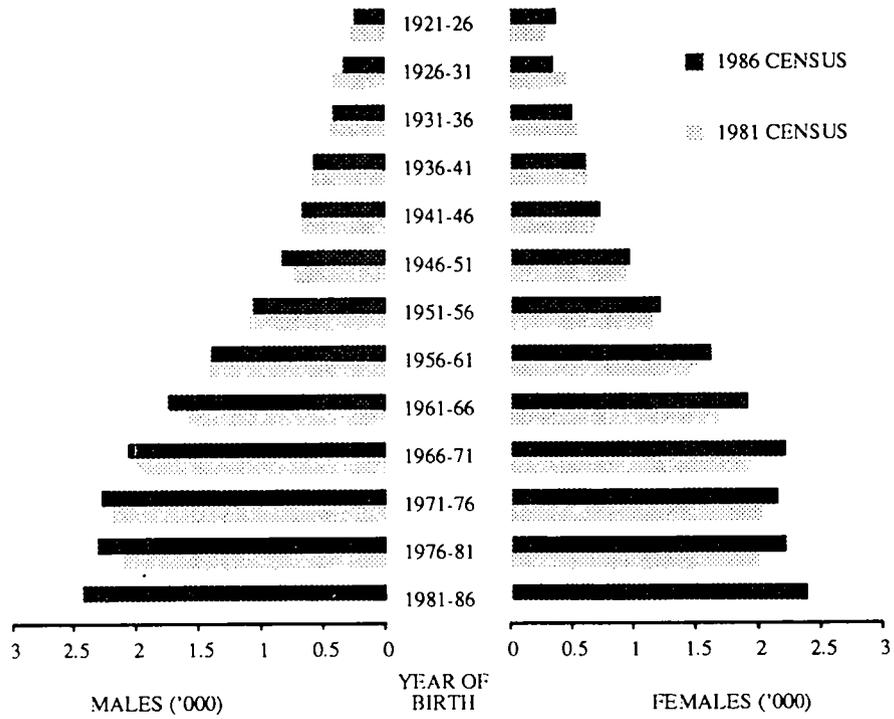
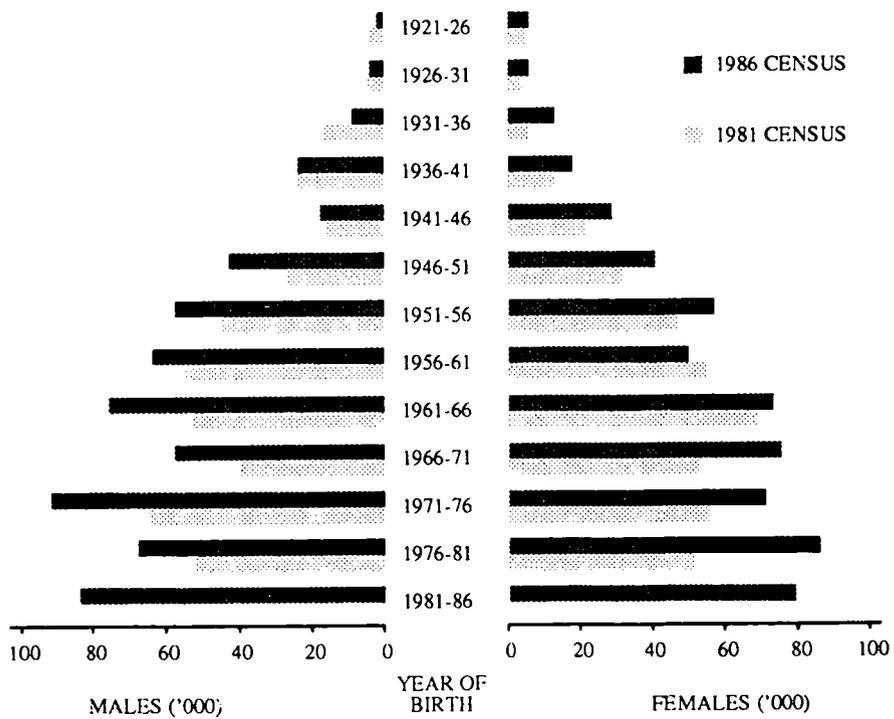


FIGURE 11: AGE-SEX STRUCTURE OF ABORIGINAL COUNTS
AUSTRALIAN CAPITAL TERRITORY



APPENDIX B

ABORIGINAL COUNTS: BY STATE AND SECTION OF STATE

State/Territory	1971 Census		1976 Census		1981 Census		1986 Census	
	No.	%	No.	%	No.	%	No.	%
New South Wales								
Major urban	6,522	(27.3)	15,511	(38.3)	11,229	(31.7)	21,416	(36.3)
Other urban	9,395	(39.4)	16,535	(40.9)	16,128	(45.6)	27,352	(46.4)
Rural	7,956	(33.3)	8,405	(20.8)	8,010	(22.6)	10,243	(17.4)
Total	23,873	(100.0)	40,451	(100.0)	35,367	(100.0)	59,011	(100.0)
Victoria								
Major urban	3,493	(54.8)	9,281	(62.9)	2,844	(47.0)	5,986	(47.5)
Other urban	1,926	(30.2)	3,724	(25.2)	2,412	(39.8)	5,224	(41.4)
Rural	952	(14.9)	1,755	(11.9)	801	(13.2)	1,401	(11.1)
Total	6,371	(100.0)	14,760	(100.0)	6,057	(100.0)	12,611	(100.0)
Queensland								
Major urban	2,901	(9.1)	6,245	(15.1)	6,524	(14.6)	11,091	(18.1)
Other urban	10,238	(32.1)	16,471	(39.8)	18,317	(41.0)	28,788	(47.0)
Rural	18,783	(58.8)	18,628	(45.1)	19,857	(44.4)	21,389	(34.9)
Total	31,922	(100.0)	41,344	(100.0)	44,698	(100.0)	61,268	(100.0)
South Australia								
Major urban	1,827	(25.0)	4,206	(39.3)	3,217	(32.7)	5,696	(40.0)
Other urban	1,537	(21.1)	2,416	(22.5)	3,066	(31.2)	4,580	(32.0)
Rural	3,935	(53.9)	4,092	(38.3)	3,542	(36.1)	4,015	(28.1)
Total	7,299	(100.0)	10,714	(100.0)	9,825	(100.0)	14,291	(100.0)
Western Australia								
Major urban	2,302	(10.4)	5,612	(21.5)	6,474	(20.7)	8,949	(23.7)
Other urban	6,596	(29.7)	8,538	(32.7)	11,269	(35.9)	15,775	(41.7)
Rural	13,283	(59.9)	11,975	(45.8)	13,608	(43.4)	13,065	(34.6)
Total	22,181	(100.0)	26,125	(100.0)	31,351	(100.0)	37,789	(100.0)
Tasmania								
Major urban	n.a.		680	(23.1)	610	(22.7)	1,351	(20.1)
Other urban	n.a.		1,300	(44.2)	1,299	(48.3)	3,460	(51.5)
Rural	n.a.		963	(32.7)	779	(29.0)	1,905	(28.4)
Total	671		2,943	(100.0)	2,688	(100.0)	6,716	(100.0)
Northern Territory								
Major urban	—		—		—		—	
Other urban	4,094	(17.5)	4,685	(19.7)	9,302	(32.0)	10,700	(30.8)
Rural	19,287	(82.5)	19,065	(80.3)	19,786	(68.0)	24,039	(69.2)
Total	23,381	(100.0)	23,750	(100.0)	29,088	(100.0)	34,739	(100.0)
Australian Capital Territory								
Major urban	n.a.		652	(78.7)	648	(78.7)	1,048	(85.9)
Other urban	n.a.		—		—		—	
Rural	n.a.		176	(21.3)	175	(21.3)	172	(14.1)
Total	255		828	(100.0)	823	(100.0)	1,220	(100.0)
Australia								
Major urban	17,332	(14.9)	42,187	(26.2)	31,546	(19.7)	55,537	(24.4)
Other urban	34,076	(29.4)	53,669	(33.4)	61,793	(38.6)	95,879	(42.1)
Rural	64,545	(55.7)	65,059	(40.4)	66,558	(41.6)	76,229	(33.5)
Total	115,953	(100.0)	160,915	(100.0)	159,897	(100.0)	227,645	(100.0)

n.a. - not available

APPENDIX C INQUIRIES

General

Advice on Interpretation of statistics from the census

NSW	Information Services St Andrew's House SYDNEY NSW 2000 (Box 796, GPO Sydney 2001) Phone (02) 268 4611 Telex AA20819 Keylink 6009: ABS 187 Fax (02) 264 7527	Neville Cowley Manger Demography Section Phone (02) 268 4387
VIC	Information Services Rialto North Tower 525 Collins Street MELBOURNE VIC 3000 (Box 2796Y, GPO Melbourne 3001) Phone (03) 615 7000 Telex AA30086 Keylink 6009: ABS 200 Fax (03) 615 7798	Garth Donaldson Manger Demography and Social Section Phone (03) 615 7600
QLD	Information Services 313 Adelaide Street BRISBANE QLD 4000 (Box 9817, GPO Brisbane 4001) Phone (07) 222 6351 Keylink 6009: ABS 359 Fax (07) 229 6171	Ron Casey Manger Demography Section Phone (07) 222 6068
WA	Information Services Hyatt Centre 30 Terrace Road PERTH WA 6000 (Box K881, GPO Perth 6001) Phone (09) 323 5140 Telex AA92041 Keylink 6009: ABS 582 Fax (09) 221 2374	Denise Scoble Manger Population Census Section Phone (09) 323 5227
SA	Information Services 41 Currie Street ADELAIDE SA 5000 (Box 2272, GPO Adelaide 5001) Phone (08) 237 7100 Telex AA82106 Keylink 6009: ABS 454 Fax (08) 237 7566	Martin Yard Manger Demography and Social Section Phone (08) 237 7413
TAS	Information Services 1st Floor, 175 Collins Street HOBART TAS 7000 (Box 66A, GPO Hobart 7001) Phone (002) 20 5800 Keylink 6009: ABS 657 Fax (002) 34 6237	Keith Churchill Assistant Director Demography, Labour and Social Section Phone (002) 20 5832
NT	The Statistician-Northern Territory 6th Floor, MLC Building 81 Smith Street DARWIN NT 0800 (Box 3796, PO Darwin 0801) Phone (089) 81 5222 Keylink 6009: ABS 708 Fax (089) 81 1218	Michael Sullivan Director Social and Economic Statistics Branch Phone (089) 81 5222
ACT	Information Services Australian Bureau of Statistics Unit 5, Cameron Offices BELCONNEN ACT 2617 (Box 10, PO Belconnen 2616) Phone (062) 52 6627 Telex AA62020 Keylink 6009: ABS 875 Fax (062) 53 1404	John Paice Director Population Census Development and Field Organisation Section Phone (062) 52 5938