Discussion Paper

Indicative projections of the Aboriginal and Torres Strait Islander population to 2011

A. Gray and K.H.W. Gaminiratne

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Jon Altman
Director, CAEPR
Australian National University

ABSTRACT

This discussion paper presents indicative projections of the Aboriginal and Torres Strait Islander population for a 20-year period from 1991. The 1991 base population has been reconstructed after adjusting for data problems evident in the age-distribution of the Aboriginal and Torres Strait Islander population in the 1991 Census count. The projection assumes zero net migration and accepts moderate declines evident between 1986 and 1991 in Aboriginal and Torres Strait Islander fertility and mortality. While recognising data problems associated with changing identification and the potential for this to affect future census counts the projections show that the Aboriginal and Torres Strait Islander population will increase at an annual rate of 2.5 per cent per year during the 1991-96 period, exceeding 300,000 by 1996, several years earlier than previously forecasted.

The annual rate of growth of the population is estimated to slowly decline in each of the subsequent five-year periods and is likely to be about 1.9 per cent by the 2006-2011 projection period. Assuming moderate declines in fertility and mortality, the Aboriginal and Torres Strait Islander population is estimated to be about 416,000 in the year 2011. The decline in fertility during the projection period, assumed to take place at a modest rate, will reduce the relative size of the child population and will consequently effectively reduce the economic dependency burden on the working-age population. This reduction in dependency burden will be slightly offset by an increased aged population, although in absolute terms the number of Aboriginal and Torres Strait Islander people aged over 65 years will remain comparatively small. The working-age population is expected to rise over the 20-year projection period re-emphasising the need for policies and programs targeted to meet the specific needs of a growing adult population.

Acknowledgments

Dr Alan Gray is Fellow, Demography Program, Research School of Social Sciences, Australian National University and a CAEPR Centre Associate and Dr K.H.W. Gaminiratne is Research Fellow, Centre for Aboriginal Economic Policy Research, Faculty of Arts, Australian National University.

In the context of constructing a set of social indicators for the Royal Commission into Aboriginal Deaths in Custody, Gray and Tesfaghiorghis (1991) used a set of projections of the Aboriginal and Torres Strait Islander population, the first to be made for Australia's Aboriginal population.[1] They illustrated the rapid changes in age structure which would occur in a 'time window' covering the twenty years from 1981 to 2001, and the implications of these rapid changes for social policy relating to Aboriginal and Torres Strait Islander affairs. The major components of population increase would be in the age groups containing young adults, and the consequences of this shift in population structure would be felt strongly in the provision of services relating to employment, health and housing. The projections were based on fertility and mortality patterns observed during the 1981-86 intercensal period and earlier.

Since population projections are made on assumptions of future trends in fertility, mortality and net migration, it is necessary to revise them from time to time depending on emerging population trends. The 1991 Census figures recently released showed population growth rates for the 1986-91 intercensal period that were somewhat higher than those that had been projected. Gray and Tesfaghiorghis (1993) ascribe this to unexpected fertility increase during the second half of the 1980s. Since the projections had been based on an assumption of continuing, but gentle, fertility decline, the apparent upturn in birth rates created substantial extra population growth. The 1991 Census enumerated 265,465 Aborigines and Torres Strait Islanders (Australian Bureau of Statistics (ABS) 1993), compared with the projected total of 251,800. The census count implies an average annual growth rate between 1986 and 1991 of 3.0 per cent, compared with 2.0 per cent envisaged in the projection.

It is essential to point out that the only reasonable initial assumption about the discrepancy between the census count and expectation is that it reflects differences in level of enumeration of the Aboriginal and Torres Strait Islander population. During the past twenty-five years, successive censuses have produced wildly fluctuating estimates of Aboriginal and Torres Strait Islander population size. It was never possible to calculate an average annual growth rate between two censuses and obtain a figure which was at all close to being within the bounds of possibility. The degree to which the 1991 Census counts and age-sex distributions replicated the projections for each State prompted Gray and Tesfaghiorghis (1993) to refer to 'a fortunate correspondence' which would enable close analysis of any deficiencies in the census counts. Gray and Tesfaghiorghis found that in most States the level of enumeration in 1991 was slightly higher than in 1986 with the exception that in Western Australia it was a little lower.

For the total Aboriginal and Torres Strait Islander population, Gray and Tesfaghiorghis used intercensal mortality reconciliation methods to

estimate that the level of enumeration in 1991 was 3.4 per cent higher than in 1986 for males and 2.1 per cent higher for females. This accounts for more than half of the discrepancy between projected population growth and the growth implied by comparison of the 1986 and 1991 Census counts. Assuming that these calculations are valid, the intercensal growth rate between 1986 and 1991 was still 2.5 per cent compared with the projected rate of 2.0 per cent. The remaining difference can be ascribed to the apparent fertility increase, the evidence for which was also found in higher-than-expected numbers of young children relative to numbers of women of child-bearing age. Gray and Tesfaghiorghis[2] estimated the total fertility ratio to be 3.22 compared with the estimate of 3.06 used for projection from 1986 to 1991.

Even on this score, it is essential to be cautious. Estimates of Aboriginal birth rates are now also available from the registration systems and sometimes also from hospital-based data collections in all States and Territories except Queensland, but these data sources are not uniformly reliable. They do show total fertility ratios slightly higher than estimates based on child-woman ratios in the States where the registration data are most reliable. Even so, it is not possible to be certain that the estimates do not reflect a mismatch between the numerators and denominators used in the rate calculations.

While we can carry out fertility calculations which assign births unambiguously to mothers who can be classified as Aboriginal/Torres Strait Islander or not (if we have enough data), the problem is that the babies cannot necessarily be classified as easily no matter how much information we have. When Jain (1989) produced estimates of Aboriginal fertility based on the own-children method of estimation using 1986 Census data, he included in the publication a table with the startling information that approximately one-third of Aboriginal families, meaning families where either the head or the spouse of the head was Aboriginal, were mixed unions between Aboriginal and non-Aboriginal partners. Unpublished information from the 1991 Census is similar (personal communications, T. Dugbaza and D.J. Benham, ABS).

There is good reason to infer that the children of mixed marriages are not, cannot, and perhaps should not be identified as Aboriginal in a straightforward way in data collections. To understand why, it is necessary to note that the standard definition of an Aboriginal person in Australia refers to three criteria in stating that Aborigines are people of Aboriginal descent who identify themselves as Aboriginal and who are also identified as Aboriginal by the communities with which they are associated. The implicit definition used in Australian censuses since 1971 admits people to the category 'Aboriginal' only on the first two criteria and is therefore somewhat wider. But note that since very young children cannot possibly

identify themselves as Aboriginal, they can only be counted as Aboriginal if someone else does the identification for them. In a census, that 'someone else' is the person who fills in the form. In the case of very young children of mixed marriages, this might depend on the identity of the person completing the form, and how carefully that person heeds the instruction to classify a person of mixed descent to the category 'to which they consider themselves to belong'. Note also, that in birth statistics, a child of an Aboriginal father and a non-Aboriginal mother will be classified as a non-Aboriginal birth because in birth statistics it is the birth rates of Aboriginal women that are of primary interest.

We emphasise these issues in this paper because we believe that difficulties surrounding the identification of very young children as Aboriginal or not have influenced census counts of the Aboriginal population to a degree which could not have been suspected until two roughly comparable levels of enumeration were achieved in successive censuses, as they were in the fortunate correspondence between the 1986 and 1991 enumerations. In particular, we argue that a large proportion of young children that are not enumerated as Aboriginal come to be classified as Aboriginal at slightly older ages. Taking this factor into account, we have constructed an indicative projection of the Aboriginal and Torres Strait Islander population on the basis of estimated fertility, mortality and population age-sex structures in the 1986-91 period.

The projection covers the period from 1991 to 2011, but we emphasise that only the first part of this period can be considered as a forecast in any sense, and it is a forecast which depends on the assumptions we have made about fertility and mortality change. The second ten-year period of the projection is no more than a scenario drawn from possible trends. This paper also mentions some of the policy issues associated with the projected population trends, but employment implications are discussed in a separate paper (Altman and Gaminiratne 1993).

Method and assumptions

The first step in constructing a projection of the Aboriginal and Torres Strait Islander population was to establish a base-line age and sex distribution in a compatible way for the years 1986 and 1991. Gray and Tesfaghiorghis (1993) noted substantial anomalies in the age and sex distributions in the 1991 Census data in comparison with the 1986 Census, and that these anomalies persisted when allowance was made for the different levels of enumeration in the two censuses. There were two main problems. The first was that there appeared to be too few young children, especially in the 0-4 years age group, but also in the 5-9 years age group. The second was that there were also too few young adults, and relatively too few young men in comparison with young women.

Table 1. Apparent percentage undercount (+) or overcount (-) of the Aboriginal and Torres Strait Islander population, between 1986 and 1991 Censuses.

Age group	Males	Females
0-4	14.8	16.2
5-9	6.6	7.2
10-14	0.0	0.0
15-19	8.3	5.3
20-24	11.7	4.3
25-29	7.7	2.5
30-34	-0.8	-1.0
35-39	-2.8	-4.1
40-44	-4.8	-1.4
45-49	-2.9	4.0
50-54	-4.8	2.8
55-59	-4.6	2.5
60-64	-4.4	-9.0
65-69	-9.5	4.7
70-74	2.2	-2.5
75+	7.1	-1.6

Both problems had been suspected to exist in previous censuses, but had been difficult to quantify given the gross differences in overall levels of enumeration between successive censuses. Analysis of the 1986 and 1991 distributions was undertaken on the assumptions that the level of enumeration of the 10-14 years age group was correct in the 1991 Census and that for each five-year age group the pattern of under-enumeration or age misstatement resulting in over-enumeration was the same for each sex in each census. There are good reasons for both assumptions to hold. In the case of the assumption that the 10-14 years age group was correctly enumerated in 1991, it seemed to us that any problems about identification of the Aboriginality of young children would have disappeared by this age. Moreover, children below the age of fifteen are the least likely to be missed by a census because they are, overwhelmingly, attached to families in a clear way. As for the second assumption, it can be inferred from the fact that the overall level of enumeration was similar in 1986 and 1991 that any gross patterns of under-enumeration would exist in both sets of data. In conjunction, these two assumptions allow the pattern of underenumeration to be identified in a unique way, which is shown in Table 1.

The most surprising feature of this table is the large size of the estimated undercount of the 0-4 years age group, with its accompanying carryover effect to age group 5-9 years. For reasons that have already been discussed,

we regard this feature of the data as reflecting difficulties in assigning young children to the appropriate self-identified racial origin category, rather than genuine under-enumeration. Less surprising is that the census underestimates numbers of young adults, especially young men. Young adults are very mobile in the Aboriginal population and are undoubtedly the most likely to be missed altogether in a census, males more than females. No particular significance can be attached to most of the other estimates in the table, except that there appears to be some age overstatement around pension age (age group 60-64 years for women and for men 65-69 years), an enumeration feature which was even more highly noticeable in data from previous censuses.

After adjustment of the 1986 Census data for the gross difference in level of enumeration of the two censuses using the procedure of Preston and Hill (1980), the adjustments shown in Table 1 when applied to both sets of census data replicate exactly the survival ratios implied by the mortality estimates given by Gray and Tesfaghiorghis (1993) for the 1986-91 period. The population adjusted in this way is considerably larger than the population enumerated in the 1991 Census, mainly because of the large additions to the 0-4 years and 5-9 years age groups. However, it was not our intention to produce a projection on a different concept of identification of the Aboriginal population. The extra young children are included only so that they may be brought into the Aboriginal population as they reach ages 5-9 years and 10-14 years in the projection period, and so that the same adjustment can be made for future cohorts.

There has, from time to time, been considerable emphasis given to the concept of self-identification as a reason for obviously different levels of enumeration of the Aboriginal population in successive censuses. We have never accepted this explanation in the past, preferring explanations based on the more immediate evidence of plain under-enumeration. The evidence before us now is that we were wrong to dismiss identification issues. It is just that the uncertainties of self-identification actually occur where no-one expected to find them, that is among young children, not among adults who in theory have a choice about the matter. The method we employ in what follows is to project forward the larger population, including unidentified children, then adjust the 0-4 years and 5-9 years age groups downward on the assumption that the same pattern of under-identification will affect future census counts to an equal degree.

Considering only the adjustments to age groups from 10-14 years through to old age, the 1991 Census estimates were increased by about 1.0 per cent, females by 1.1 per cent and males by 0.8 per cent. This could be considered conservative, since it implies an overall adjustment factor below the one indicated by Post Enumeration Survey results (Evans, Kahles and Bate 1993), which found an overall net under-count of the

Aboriginal and Torres Strait Islander population of 3.6 per cent (but with a standard error of 7.2) that did not actually allow a firm conclusion about whether there was an under-count or over-count. Having established a base population, the only extra requirements to construct a projection are assumptions about mortality, fertility and migration. These assumptions were based on the age pattern of fertility and mortality estimated by Gray and Tesfaghiorghis (1993) for the 1986-1991 period. It was assumed that both mortality and fertility would gradually decline over the projection period, and migration effects were regarded as insignificant.

The total fertility ratio of 3.22 for the 1986-91 period was projected to return to its 1981-1986 level of 3.12 during 1991-96. Thereafter we assumed gradually accelerating decline to 2.99 during 1996-2001, 2.84 during 2001-2006 and finally 2.64 in the 2006-2011 projection period (Table 2). For each projection period the total births expected were distributed between boys and girls according to an assumed sex ratio of 105. Anticipated changes in Aboriginal and Torres Strait Islander fertility are small and are in fact achievable. Assumption of a return to slow decline in rates of birth would be consistent with the Aboriginal population following the experience of the total Australian population, which along with many other high-income countries experienced a slight and temporary increase in fertility in the second half of the 1980s. But we recognise that fertility trends are notoriously difficult to project, and that future rates may well be quite different.

Table 2. Aboriginal and Torres Strait Islander total fertility ratio and expectation of life at birth assumed to prevail during the projection period, 1991-2011.

Projection period	Life expectancy (years)		Total fertility ratio
	Male	Female	
1986-1991[a]	56.9	64.4	3.22
1991-1996	58.1	65.7	3.12
1996-2001	59.5	67.1	2.99
2001-2006	60.9	68.5	2.84
2006-2011	62.3	69.9	2.64

a. Base data from Gray and Tesfaghiorghis (1993).

Anticipating that Aboriginal and Torres Strait Islander health status would increase at a modest rate over the projection period, the mortality assumptions envisaged increase in expectation of life at birth of about 5.5

years for each sex between the intercensal period 1986-91 and the end of projection period (2006-2011). This might seem a conservative assumption, but it is consistent with estimated improvement in life expectancy during the 1980s and in fact envisages a decline of approximately 5.0 per cent in age-specific death rates in each five-year period. The assumed life expectancy figures for Aboriginal and Torres Strait Islander males and females are also shown in Table 2.

Projection results

The results of the projection of the Aboriginal and Torres Strait Islander population for each sex are summarised in Table 3 (see Appendix for details of the projected and annual estimates). The total Aboriginal and Torres Strait Islander population, under the assumptions we have employed, would increase from 268,012 in 1991 to 416,780 in the year 2011 - a total increase of 56.0 per cent during the 20-year period or an average annual rate of 2.2 per cent.

Table 3. Projected Aboriginal and Torres Strait Islander population by sex, 1991-2011.

Year	Male	Female	Total
1991	132,899	135,113	268,012
1996	150,268	153,214	303,452
2001	168,248	171,870	340,118
2006	186,964	191,227	378,191
2011	205,953	210,833	416,786

The increase in population is not, however, expected to be uniform. In the initial five-year period (1991-96) the projected increase is still at a rate of 2.5 per cent per year, and the total will pass the 300,000 mark by the year 1996. The population will continue to increase but at progressively lower growth rates during the subsequent five-year intervals in the projection period (Table 4), so that by 2006-11 the rate of increase would be 1.9 per cent per year. If the Aboriginal and Torres Strait Islander population follows the paths of fertility and mortality assumed by the projection, then it is possible that Aborigines would be 1.9 per cent of the total population by the year 2011, in comparison with series A of Australian population projections by the ABS (1990).

Table 4. Growth rates of Aboriginal and Torres Strait Islander population 1991-2011.

Projection period	Rate of growth per annum		
	Male	Female	Total
1991-1996	2.46	2.51	2.49
1996-2001	2.26	2.30	2.28
2001-2006	2.11	2.13	2.12
2006-2011	1.93	1.95	1.94

Sex ratio

Female Aboriginal life expectancy at birth is about 7.6 years higher than that of males. Because of this, since the mid-1970s there has been an increasing excess of females over males, and this excess is expected to grow, though very slowly as shown in Table 5.

Table 5. Sex composition of the Aboriginal and Torres Strait Islander Population, 1991-2011.

Year	Males per 100 females
1991	98.4
1996	98.1
2001	97.9
2006	97.8
2011	97.7

Age structure

The effect of falling fertility, even at the moderate level assumed in the projection, is clearly evident in the age-structure of the Aboriginal and Torres Strait Islander population. In absolute terms the size of the youngest age group (0-4 years of age) is projected to increase by 21.0 per cent from 38,427 in 1991 to 46,629 in 2011, as shown in Table 6. Relative to other age groups, this is the smallest proportionate increase. The number of children between the ages of 5-14 years will rise gradually from 66,059 in 1991 to 96,279 in 2011, an increase of 46.0 per cent. Despite this increase the proportion of children under the age of 15 years to the total population

will decline from 39.0 per cent in 1991 to 38.0 per cent by the turn of the next century (2001) then continue to decline to 34.0 per cent in 2011.

Table 6. Distribution of projected Aboriginal and Torres Strait Islander population by broad age group, 1991-2011.

Age group	1991	1996	2001	2006	2011
			Numerical distribution		
<15	104,492	118,023	129,778	136,940	142,908
0-4	38,427	41,096	42,846	45,125	46,629
5-14	66,065	76,927	86,932	91,815	96,279
15-64	156,710	177,839	201,576	230,939	261,415
15-34	104,184	114,095	123,605	135,483	149,264
35-49	36,381	44,804	54,738	66,756	76,183
50-64	16,145	18,941	23,233	28,700	35,968
65+	6,810	7,620	8,764	10,312	12,464
Total	268,012	303,482	340,118	378,191	416,786
			Index of growth (1991=100)		
<15	100	113	124	131	137
0-4	100	107	111	117	121
5-14	100	116	132	139	146
15-64	100	113	129	147	167
15-34	100	110	119	130	143
35-49	100	123	150	183	209
50-64	100	117	144	178	223
65+	100	112	129	151	183
Total	100	113	127	141	156
			Per cent distribution		
<15	39.0	38.9	38.2	36.2	34.3
15-64	58.9	58.6	59.3	61.1	62.7
65+	2.5	2.5	2.6	2.7	3.0
Total	100.0	100.0	100.0	100.0	100.0

The population of working age (15-64 years) will experience a significant increase over the years: its numbers will rise by 67.0 per cent during the 20-year projection period from 156,710 in 1991 to 261,415 in 2011. The rate of increase will slow after 2006 when the effect of reduced fertility begins to influence the working-age population. The increase in the working-age population is mainly caused by the increase in persons aged 35-49 years and 50-64 years, rather than persons of young adult ages who consist of a cohort of children who were born when fertility began to decline noticeably (Gray 1983). Due to the same reason, the proportion of

persons of working age projected for the year 1996 is slightly lower than that for 1991. For the remainder of the projection period the proportion of working age will continue to increase. The increase in the working-age population reflects past patterns of fertility, as well as the improved survival of the adult population.

The projection results show that the aged component of the Aboriginal and Torres Strait Islander population, although in absolute terms comparatively small, will undergo significant increases over the projection period. In the year 2011, the relative size of the aged will be about 83.0 per cent higher than in 1991.

As a result of changes in the age-structure associated with declining fertility, the median age of the population will rise from a low of 19.2 years for males in 1991 to 21.9 years in 2011. The female median age is expected to rise from 20.4 years to 23.0 years during the same period (Table 7).

Table 7. Median age of Aboriginal and Torres Strait Islander population by sex, 1991-2011.

Year	Male	Female
1991	19.2	20.4
1996	19.9	21.1
2001	20.2	21.4
2006	20.8	21.9
2011	21.9	23.0

Dependency

In order to examine the possible economic burden placed by dependents on the working-age population, three indices can be examined. These are the child dependency ratio (ratio of those 0-14 years of age to the population 15-64 years of age), the aged dependency ratio (ratio of persons 65 years of age or higher to persons aged 15-64 years) and the overall dependency ratio (the sum of the previous two). The child dependency ratio is projected to decline gradually from 66.7 per 100 persons of working age in 1991 to the much lower figure of 54.7 by the year 2011 (Table 8), reflecting mainly the effects of declining fertility over the projection period. The aged dependency ratio is expected to remain at 4.3 per 100 persons of working age for 10 years from 1991, then rise slowly reaching 4.5 in the year 2006 and 4.8 in the year 2011. Although the aged dependency ratio is expected to increase after 2001, the overall

dependency ratio will continue to decline because the effects of increase in aged dependency are counterbalanced by the decline in child population.

Table 8. Projected trends in Aboriginal and Torres Strait Islander dependency ratios, 1991-2011.

| Year | Dependency ratio (per 100 persons aged 15-64) | | |
	Child (<15 years)	Aged (65 years and over)	Total (child+aged)
1991	66.7	4.3	71.0
1996	66.4	4.3	70.6
2001	64.4	4.3	68.7
2006	59.3	4.5	63.8
2011	54.7	4.8	59.4

Discussion

The projection presented here assumes moderate decline in Aboriginal and Torres Strait Islander fertility and mortality over the 20-year period. Declining fertility will decrease the proportion of children under the age of 15 years, and increase significantly the population in the age groups from 15-64 years, who share the main economic and social responsibilities for support of both old and young, however questionable the concept of a 'working'-age population may be in a social context of economic marginalisation. The proportion of persons aged 65 years and over will increase although at a moderate level. We have emphasised elsewhere (Gray and Tesfaghiorghis 1991; Altman and Gaminiratne 1993), that this shift in population balance makes consideration of a move in Aboriginal affairs program emphasis towards the needs of adults, particularly young adults, an urgent priority.

In this sense, the projections in this paper do not break new ground, but they envisage more rapid Aboriginal population increase than had previously been projected. There are three main reasons for this. The first is that the 1991 Census was enumerated at a slightly higher level than the 1986 Census, so that projections from the new 1991 base, itself adjusted slightly upwards as a result of analysis of age structure, are naturally higher than previous projections.

The second reason is that Aboriginal fertility rose slightly in the 1986-91 period, contrary to expectations. While we have assumed that the increase was temporary, we cannot be absolutely sure of this. Nevertheless, if there was no decline, or even further slight increase, the change in age-structure

towards an increasingly adult population that we have outlined would not be substantially different because that shift is based on population changes which have already occurred.

The third reason is that the projection we have constructed includes allowance for the phenomenon, before now never quantified, of gradual identification of the Aboriginality of young children. We assume that this is associated with the high proportion of mixed marriages among Aboriginal families, but verification would require careful analysis of census and other data to establish how children of mixed unions are normally identified. The data to examine this are not available to us, but it is an exercise that should be undertaken by the ABS before it proceeds with its plan to produce regular Aboriginal population estimates.

Notes

1.   The terms Aborigine and Aboriginal will be used to refer to the Aboriginal and Torres Strait Islander populations of Australia.

2.   The total fertility ratio is the average number of live births that a woman would have given the age-specific fertility rates for each age group.

Appendix

Table A1. Projected Aboriginal and Torres Strait Islander population by age and sex, 1991-2011.

Age group	Male	1991 Female	Total	Male	1996 Female	Total
0-4	19,434	18,993	38,427	20,827	20,269	41,096
5-9	17,718	17,263	34,981	21,357	20,699	42,056
10-14	15,931	15,153	31,084	17,632	17,239	34,871
15-19	15,895	15,004	30,899	15,788	15,086	30,874
20-24	14,752	14,794	29,546	15,680	14,862	30,542
25-29	11,939	12,305	24,244	14,402	14,624	29,026
30-34	9,369	10,126	19,495	11,531	12,122	23,652
35-39	7,303	7,918	15,221	8,958	9,901	18,860
40-44	5,729	6,409	12,138	6,875	7,668	14,542
45-49	4,313	4,709	9,022	5,280	6,121	11,402
50-54	3,216	3,717	6,933	3,864	4,410	8,274
55-59	2,481	2,834	5,315	2,773	3,384	6,157
60-64	1,810	2,087	3,897	2,032	2,478	4,510
65-69	1,223	1,587	2,810	1,383	1,724	3,107
70-74	851	976	1,827	851	1,208	2,059
75+	935	1,238	2,173	1,035	1,419	2,454
Total	132,899	135,113	268,012	150,268	153,214	303,482
Summary						
0-4	19,434	18,993	38,427	20,827	20,269	41,096
5-14	33,649	32,416	66,065	38,989	37,938	76,927
15-49	69,300	71,265	140,565	78,514	80,384	158,898
15-64	76,807	19,036	95,843	21,113	23,690	44,804
65+	3,009	8,638	11,647	8,669	10,272	18,941

Table A1. Continued.

Age group	Male	2001 Female	Total	Male	2006 Female	Total
0-4	21,718	21,128	42,846	22,877	22,248	45,125
5-9	22,900	22,099	44,999	23,893	23,045	46,938
10-14	21,261	20,672	41,933	22,805	22,072	44,877
15-19	17,485	17,169	34,654	21,097	20,595	41,692
20-24	15,590	14,954	30,544	17,282	17,030	34,312
25-29	15,335	14,704	30,039	15,272	14,807	30,079
30-34	13,945	14,422	28,367	14,884	14,516	29,400
35-39	11,062	11,872	22,934	13,420	14,147	27,566
40-44	8,471	9,611	18,082	10,503	11,550	22,052
45-49	6,374	7,348	13,723	7,898	9,240	17,138
50-54	4,769	5,760	10,529	5,801	6,946	12,746
55-59	3,368	4,042	7,411	4,199	5,314	9,513
60-64	2,305	2,989	5,293	2,838	3,603	6,441
65-69	1,584	2,076	3,660	1,829	2,536	4,365
70-74	988	1,339	2,327	1,160	1,642	2,803
75+	1,093	1,684	2,777	1,206	1,938	3,144
Total	168,248	171,870	340,118	186,964	191,227	378,191
Summary						
0-4	21,718	21,128	42,846	22,877	22,248	45,125
5-14	44,161	42,771	86,932	46,698	45,117	91,815
15-49	88,262	90,081	178,343	100,356	101,883	202,239
15-64	98,704	28,831	127,536	31,821	34,936	66,756
65+	3,665	12,791	16,456	12,838	15,862	28,700

Table A1. Continued.

Age group	Male	2011 Female	Total
0-4	23,642	22,987	46,629
5-9	25,180	24,276	49,456
10-14	23,801	23,021	46,823
15-19	22,642	21,995	44,637
20-24	20,870	20,440	41,310
25-29	16,956	16,874	33,830
30-34	14,856	14,631	29,487
35-39	14,363	14,259	28,623
40-44	12,790	13,790	26,581
45-49	9,844	11,135	20,979
50-54	7,237	8,770	16,007
55-59	5,156	6,446	11,602
60-64	3,583	4,777	8,359
65-69	2,291	3,094	5,385
70-74	1,371	2,041	3,412
75+	1,371	2,295	3,666
Total	205,953	210,833	416,786
Summary			
0-4	23,642	22,987	46,629
5-14	48,981	47,297	96,279
15-49	112,,321	113,126	225,447
15-64	128,296	39,185	167,482
65+	5,033	19,992	25,026

Table A2. Estimated Aboriginal and Torres Strait Islander population in each individual year during the projection period, 1991-2011.[a]

Year	Population	Year	Population
1991	268,012	2002	347,752
1992	274,932	2003	355,125
1993	281,805	2004	362,653
1994	288,851	2005	370,341
1995	296,072	2006	378,191
1996	303,482	2007	385,952
1997	310,789	2008	393,439
1998	317,875	2019	401,072
1999	325,123	2010	408,853
2000	332,536	2011	416,786
2001	340,118		

a. Estimates based on the growth rates in each five-year projection period.

References

Altman, J.C. and Gaminiratne, K.H.W. 1993. 'Employment implications of the growth of the indigenous Australian working-age population to 2001', *CAEPR Discussion Paper No. 53*, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.

Australian Bureau of Statistics (ABS) 1990. *Projections of the Populations of Australia, States and Territories, 1991-2031*, cat. no. 3220.0, ABS, Canberra.

Australian Bureau of Statistics (ABS) 1993. *1991 Census - Australia's Aboriginal and Torres Strait Islander People*, cat. no. 2740.0, ABS, Canberra.

Evans, J., Kahles, D. and Bate, C. 1993. *1991 Census Data Quality: Aboriginal and Torres Strait Islander Counts*, Census Working Paper 93/6, Australian Bureau of Statistics, Canberra.

Gray, A. 1983. Australian Aboriginal Fertility Decline, unpublished PhD thesis, Australian National University, Canberra.

Gray, A. and Tesfaghiorghis, H. 1991. 'Social indicators of the Aboriginal population of Australia', *CAEPR Discussion Paper No. 18*, Centre for Aboriginal Economic Policy Research, Australian National University, Canberra.

Gray, A. and Tesfaghiorghis, H. 1993. 'Aboriginal population prospects', *Journal of the Australian Population Association*, (forthcoming).

Jain, S.K. 1989. *Estimation of Aboriginal Fertility, 1971-86: An Application of the Own-Children Method of Fertility Estimation*, cat. no. 4127.0, Australian Bureau of Statistics, Canberra.

Preston, S.H. and Hill, K.J. 1980. 'Estimating the completeness of death registration', *Population Studies*, 34: 349-66.
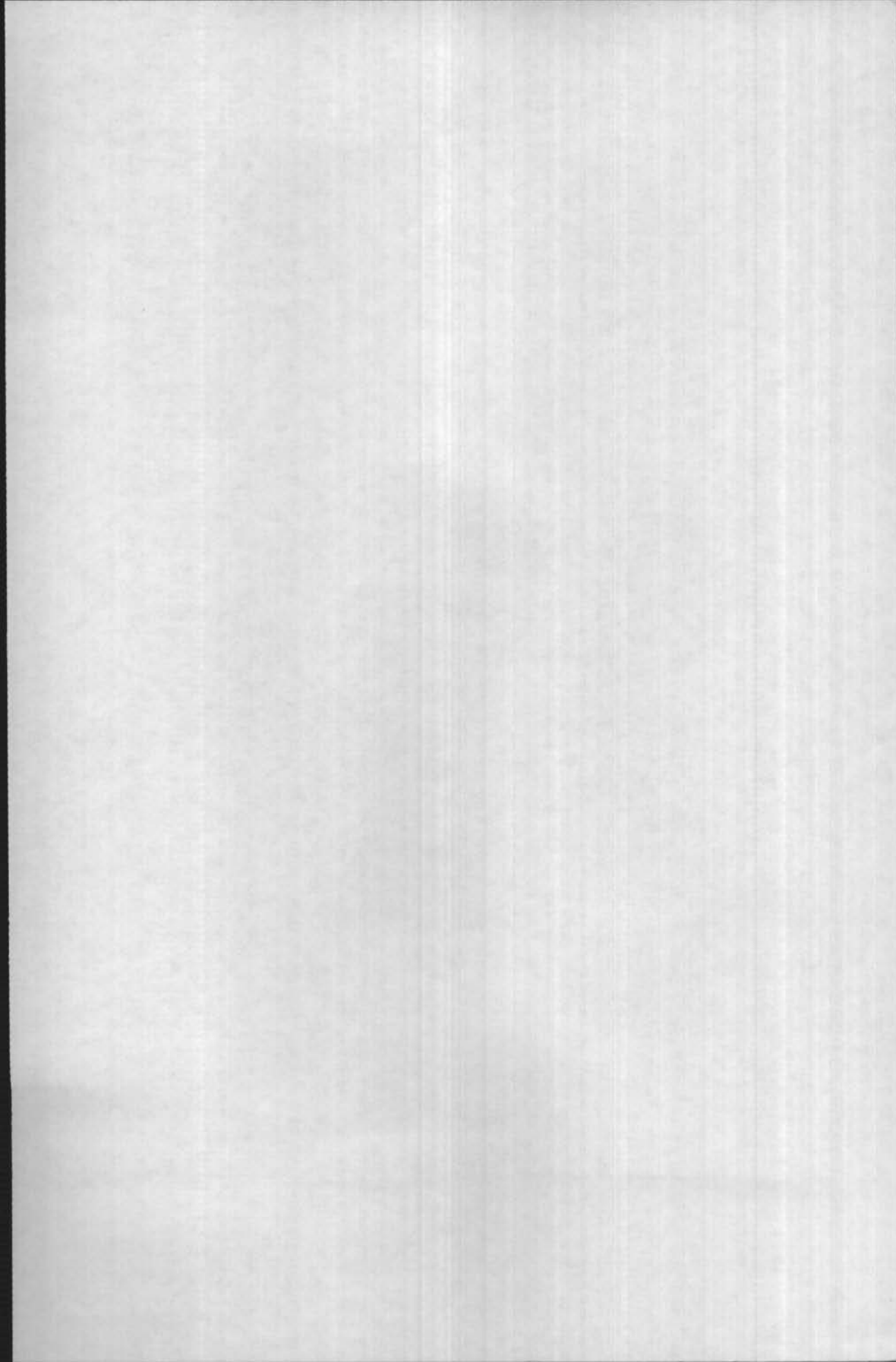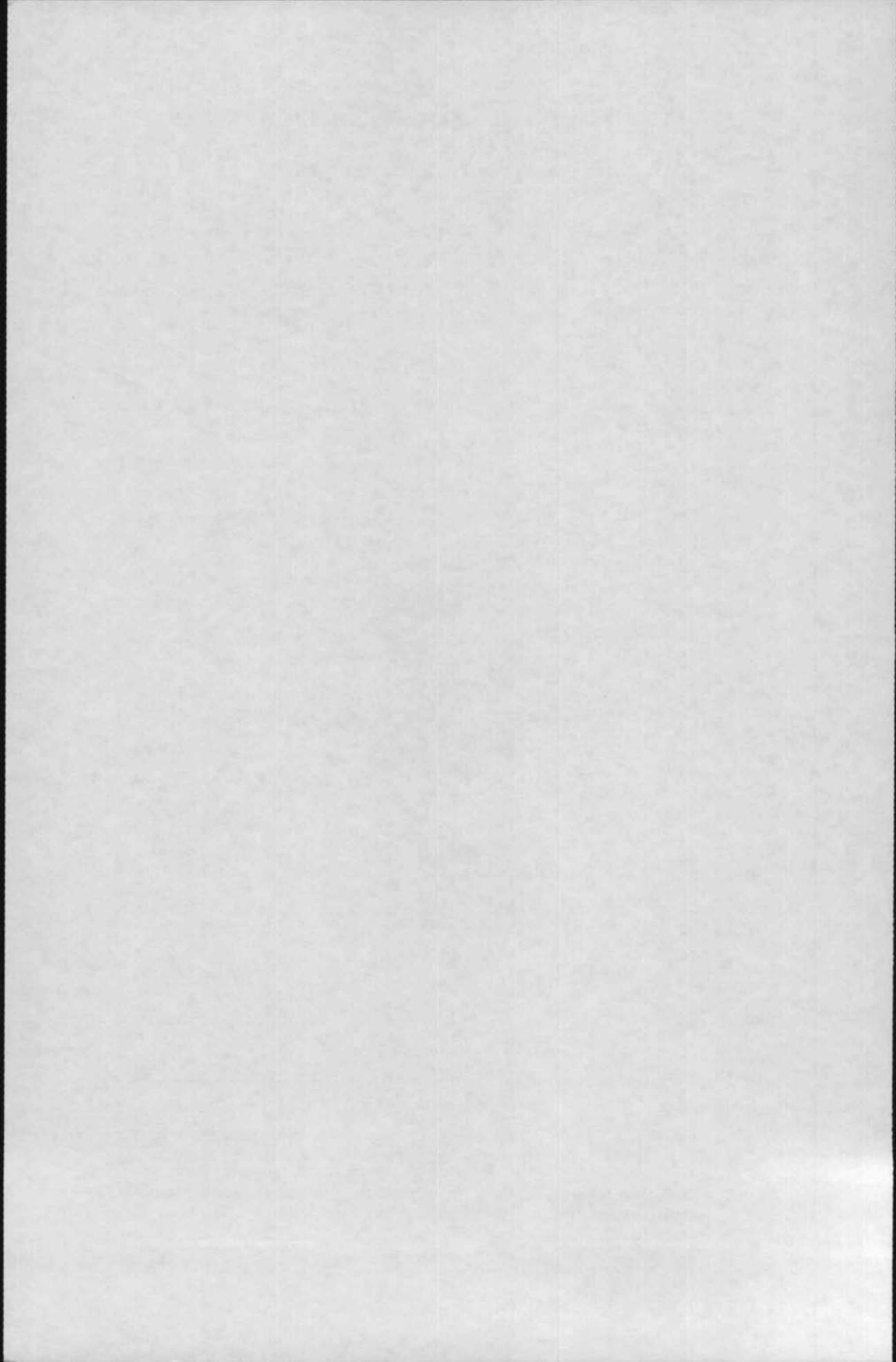
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