Indigenous People in the Murray-Darling Basin: A Statistical Profile

J. Taylor and N. Biddle

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Professor Jon Altman
Director, CAEPR
The Australian National University
October 2004

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ABBREVIATIONS AND ACRONYMS

ABS  Australian Bureau of Statistics
AIGC  Australian Indigenous Geographic Classification
ANZSIC  Australian and New Zealand Standard Industry Classification
ASCO  Australian Standard Classification of Occupations
ASGC  Australian Standard Geographic Classification
ASFR  age specific fertility rate
ATSIC  Aboriginal and Torres Strait Islander Commission
CDEP  Community Development Employment Projects (Scheme)
CHINS  Community Housing and Infrastructure Needs Survey
COAG  Council of Australian Governments
ERP  estimated resident population
GIS  Geographic Information System
IA  Indigenous Area
ICCP  Indigenous Community Coordination Pilot
ILO  International Labour Organisation
LGA  Local Government Area
MDBC  Murray–Darling Basin Commission
MDBIAP  Murray–Darling Basin Indigenous Action Plan
MLDIN  Murray Lower Darling Indigenous Nations
NILF  not in the labour force
NRIN  Northern Rivers Indigenous Nations
NRM  natural resource management
SD  Statistical Division
SLA  Statistical Local Area
ABSTRACT

Within the framework of the Council for Australian Governments (COAG) requirements for benchmarking Indigenous disadvantage and reporting on strategies and performance towards redress, the Murray–Darling Basin Ministerial Council has moved to establish the Murray–Darling Basin Indigenous Action Plan. The plan is built around processes directing natural resource management, and fundamental to it is an understanding of Indigenous and non-Indigenous population numbers in the Basin, their characteristics, distribution and trajectory of change, as well as a measure of their relative socioeconomic status. Such demographic and socioeconomic information provides for assessment of the quantum of need in social and economic policy, and for assessment of the impact of that quantum in environmental policy. Accordingly, the Centre for Aboriginal Economic Policy Research was commissioned by the Murray–Darling Basin Commission to develop a baseline regional profile. Indigenous people represent an increasing share of the population in the Murray–Darling Basin with particularly high proportions in the north and west. As with many other parts of the country, their labour force and income status remain relatively poor creating a challenge to COAG partners to ensure increased Indigenous participation in regional development planning and activity.

ACKNOWLEDGMENTS

This paper was commissioned by the Murray–Darling Basin Commission (MDBC) as input to the development of the Murray–Darling Basin Indigenous Action Plan. Its impetus arose from the findings of regional forums held by the Commission with Indigenous nations around the Basin to identify local priority issues. Key findings from the paper were presented at a special Indigenous Basin Wide Gathering held at Old Parliament House in Canberra from 19 to 21 May 2004. The authors are grateful to delegates at that gathering for their positive feedback. Special thanks are also due to Liz McNiven and Monica Morgan of the MDBC who commissioned the work and guided it through its formative stages. Peer review was provided by members of a research team assisting the commission including Lisa Strelein and Patrick Sullivan from the Australian Institute of Aboriginal and Torres Strait Islander Studies, and Donna Craig of Macquarie University, while the final product was much improved following comments from Jon Altman of CAEPR. We are also grateful to Frances Morphy for copy editing and for the tremendous efforts of John Hughes in preparing the maps and layout.
INTRODUCTION

One of the tasks that CAEPR has pursued since its inception is the development of regional profiles of the socioeconomic characteristics of Indigenous people, outlining diversity in their circumstances and relative status compared to other Australians. Initial work in this area focused on State and Territory jurisdictions, as well as urban and rural areas (Taylor 1993), while more recently attention has shifted to regions defined according to Indigenous governance structures and by ecological zoning (Taylor 2003b, 2004). This paper continues the latter trend with a focus on the population of the Murray–Darling Basin.

Impetus for this focus arose from an initiative of the Murray–Darling Basin Ministerial Council within the framework of Council of Australian Governments (COAG) requirements for benchmarking Indigenous disadvantage and reporting on strategies and performance aimed at redress. Accordingly the Council moved to establish the Murray–Darling Basin Indigenous Action Plan (MDBIAP) built around processes directing natural resource management. Consent for such a plan stems from an assertion by Indigenous nations of the Basin that the Murray–Darling Basin river system displays unique cultural, social, economic and environmental characteristics that raise particular challenges in terms of creating sustainable livelihoods and a place for Indigenous participation and recognition of inherent rights (Morgan, Strelein & Weir 2004).

Fundamental to this assertion, and to the development of options and priorities for enhanced Indigenous participation, is an understanding of Indigenous and non-Indigenous population numbers in the Basin, their characteristics, distribution and trajectory of change, as well as a measure of their relative socioeconomic status. This is because demographic and socioeconomic information provides for assessment of the quantum of need in social and economic policy, and for assessment of the impact of that quantum in environmental policy. Ultimately, what is sought is a predictive capacity to assist in planning and evaluation.

Such a focus on regional profiling is not new in Indigenous affairs. It formed part of the Aboriginal and Torres Strait Islander Commission (ATSIC) regional planning process (at least notionally) from the mid 1990s, and now comprises a core element of the COAG Indigenous Community Coordination Pilot (ICCP) projects (Taylor 2004), one of which (Murdi Paaki) falls largely within the Murray–Darling Basin. As an exercise in whole-of-government service delivery, these ICCP initiatives aim to identify mutually determined social, economic, and service delivery outcomes, together with the means to achieve them and assumed responsibilities. Significantly, these are to be codified in negotiated regional development plans and then subject to a regular process of evaluation and monitoring against measurable outcomes. Clearly, for the latter to occur, it is necessary at the outset to establish baseline indicators of social and economic conditions against which any subsequent change can be calibrated. This is what the present exercise seeks to provide (in a preliminary way) for the Murray–Darling Basin as a whole. Such a baseline also generates essential input to the identification of priority regional development issues and assists in the building of capacity for Indigenous nations’ governance by enhancing the flow of information and degree of local knowledge of social and economic circumstances.
The place of such baseline profiling in the overall framework of regional planning is illustrated by sequential processes that have emerged during the conduct of the COAG ICCP trial at Wadeye in the Northern Territory. As noted by Taylor (2004), the planning sequence in that exercise has involved:

- demarcation of regional boundaries and rules for population inclusion
- identification of regional goals
- formulation of measurable objectives related to goals
- establishment of a baseline profile
- projection of the future situation (a generation ahead)
- establishment of alternate courses of action to achieve stated goals and the acceptance of a preferred plan(s)
- procedures for evaluating planned outcomes versus actual outcomes.

It is significant that Indigenous nations of the Murray–Darling have also articulated a need for baseline population profiling. At a series of regional-based forums convened by the Murray–Darling Basin Commission with representatives from nations across the Basin, and at a subsequent Basin-wide gathering in Canberra, population profiling was seen as a key vehicle for self-empowerment and as an essential functional task of proposed nation catchment research offices under the Murray Lower Darling Indigenous Nations (MLDRN)/Northern Rivers Indigenous Nations (NRIN) governance structure within the MDBIAP.

The demand from these forums was to commence analysis by using census and other Australian Bureau of Statistics (ABS) data to establish some initial basic parameters of Indigenous demography and socioeconomic status as a preliminary input to discussions around the formulation of the Indigenous Action Plan. Accordingly, the Centre for Aboriginal Economic Policy Research at the Australian National University was commissioned by the Murray–Darling Basin Commission to develop estimates of the Indigenous and non-Indigenous populations resident within the Murray–Darling Basin and to prepare indicators of their relative socioeconomic status. For this initial exercise, the focus is on population size, change, distribution and age structure, as well as on labour force and income status—these indicators being the most amenable using public access ABS data. Other socioeconomic data relating to education, training, housing, health, and interaction with the criminal justice system are best informed by combining ABS and administrative data—a task which is more time consuming given the number of State and Territory jurisdictions covering the Basin and the need to establish protocols for access.

**GEOGRAPHIC CONCORDANCE**

A prerequisite for regional demographic analysis is a demarcation of spatial boundaries. However, population estimates and analysis of population characteristics are rarely reported for ecological zones, although there
is a growing trend in this direction (Taylor 2003b). Accordingly, the first step in building a profile of the Murray–Darling population is to establish the degree of spatial match between outer limits of the drainage basin and associated boundaries of the ABS Australian Standard Geographic Classification (ASGC) and Australian Indigenous Geographic Classification (AIGC) upon which official demographic and census data are reported. For the deployment of such data in the current profiling exercise, the relevant units of analysis are Statistical Local Areas (SLAs) from the ASGC and Indigenous Areas (IAs) from the AIGC.

Scrutiny of the boundaries of SLAs and IAs reveals that ABS geography is closely aligned to the contours of the Basin with most spatial units around the perimeter falling wholly on either side of the watershed. In the few cases where this is not the case, judgement as to the inclusion or exclusion of spatial units was based on the balance of population distribution within the area. More sophisticated Geographic Information System (GIS)-based methods (not adopted here) would apply direct spatial matching by pro-rating the population of geographic units based on the percent of area in and out of the Basin. Despite the lack of perfect spatial match, a high degree of concordance between ABS and environmental boundaries does exist and this provides an interesting comment in itself about the relationship between Australian drainage basins and population distribution. Table 1 details the ASGC units involved.

DEMOGRAPHY OF THE MURRAY–DARLING BASIN

As the ecological foundation of Aboriginal livelihoods for millennia, the rivers, tributaries and floodplains of the Murray–Darling drainage system sustained population densities that were relatively high in continental terms up to the expansion of the European settlement frontier across the region in the nineteenth century and the consequent decline and dispersal of Indigenous populations. Evidence of long-standing concentrations of population related to the exploitation of riverine and inter-fluvial environments of the Basin stems from the archaeological, cultural, and social record. This details the existence of substantial burial sites, widespread sedentarism, complex cultural forms, and intra-regional trade (Bell 1998; Berndt, Berndt & Stanton 1993; Birdsell 1953; Keen 2004; Pardoe 1995; Radcliffe-Brown 1918, 1923; Webb 1984). Not surprisingly, Tindale (1974) identified as many as 44 distinct tribal groups within the Basin, each displaying association with particular territories, these being most numerous along major river courses (such as the Murray) where higher biomass produced greater potential for higher human population. Furthermore, anthropologists clearly identify the Basin as a coherent cultural realm with common intra-regional ties of kinship, social organisation, trade, and material culture distinct from those evident in other such areas of the continent (Peterson 1976).

Thus, from an Indigenous perspective, a proper demography of the Murray–Darling Basin commences well before European incursion into the region and seeks to reconstruct the impact of the latter. While this is not attempted here, what should be said is that population decline accompanied (even preceded) the invasion of Aboriginal lands in the Basin (Butlin 1983; Smith 1980), and that subsequent policies of assimilation and population dispersal produced upheaval and spatial fragmentation (Ball 1985; Castle & Hagan 1984;
Significantly, though, and notwithstanding this demographic history, the Indigenous peoples of the Murray–Darling Basin have continued in sufficient numbers and ongoing association with traditional country as to collectively form a sizeable and distinct component of the overall contemporary Basin population.

### POPULATION SIZE

In 2001, the total estimated resident population (ERP) of the Basin was just over two million (Table 2). Of this number, 3.4 per cent (almost 70,000) were Indigenous people—a figure which represents 15 per cent of the national Indigenous population. While this comprises only a small share of the overall Basin population,

---

**Table 1. Concordance between the Murray–Darling Basin and the 2001 ASGC**

<table>
<thead>
<tr>
<th>New South Wales</th>
<th>Victoria</th>
<th>Queensland</th>
</tr>
</thead>
<tbody>
<tr>
<td>SD 130 Northern (excluding SLAs 0111, 0112, 7850, 6000)</td>
<td>SD 210 Barwon</td>
<td>SD 320 Darling Downs</td>
</tr>
<tr>
<td>SD 135 North Western</td>
<td>SD 225 Wimmera</td>
<td>SD 325 South West (excluding SLAs 1750, 6150)</td>
</tr>
<tr>
<td>SD 140 Central West (excluding SLA 3300)</td>
<td>SD 230 Mallee</td>
<td>South Australia</td>
</tr>
<tr>
<td>SD 145 South Eastern (excluding SLAs 3150, 5450, 7250, 0550, 2750, 1000, 7050)</td>
<td>SD 235 Loddon</td>
<td>SD 420 Murray Lands</td>
</tr>
<tr>
<td>SD 150 Murrumbidgee</td>
<td>SD 240 Goulburn</td>
<td>Australian Capital Territory</td>
</tr>
<tr>
<td>SD 155 Murray</td>
<td>SD 245 Ovens-Murray</td>
<td>SD 805 Canberra</td>
</tr>
<tr>
<td>SD 160 Far West</td>
<td></td>
<td>SD 810 ACT - Balance</td>
</tr>
</tbody>
</table>

*SD = Statistical Division; SLA = Statistical Local Area.*
Table 2. Indigenous and non-Indigenous ERPs of the Murray–Darling Basin, 2001

<table>
<thead>
<tr>
<th></th>
<th>Population (no.)</th>
<th>Population share (%)</th>
<th>Annual growth ratea (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>68,656</td>
<td>3.4</td>
<td>3.3</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>1,960,099</td>
<td>96.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Total Basin</td>
<td>2,028,755</td>
<td>100</td>
<td>0.7</td>
</tr>
</tbody>
</table>


Source: ABS Demography section Canberra, ERP customised tables.

It should be noted that it is higher than the Indigenous share of the national population which stands at 2.4 per cent. It also represents a 13 per cent increase in the proportional share of the Basin’s total population from the figure of 3.0 per cent recorded in 1996. Given the fact that the Indigenous population of the Basin grew at a rate five times that of the equivalent non-Indigenous population between 1996 and 2001 (Table 2), the prospects for the Indigenous share to continue to rise over time appears high. This issue will be further explored in the development of population projections.

POPULATION DISTRIBUTION

The Murray–Darling Basin contains 42 per cent of Australia’s farms, and, not surprisingly, agriculture is the key sector of the Basin’s economy. At the same time, several large regional service centres (including Canberra) are prominent in the Basin’s settlement pattern, together with two major towns built around mining (Bendigo and Broken Hill). Overall, almost half of the region’s population (49.7%) lives in one of 18 settlements of over 10,000 persons. These include Canberra, Queanbeyan, Tumut, Albury, Wodonga, Wangaratta, Shepparton, Bendigo, Mildura, Broken Hill, Leeton, Cowra, Griffith, Orange, Bathurst, Dubbo, Tamworth, and Toowoomba. If the distribution of the Basin’s Indigenous and non-Indigenous population is considered according to residence within or outside of these larger centres, then a clear difference emerges whereby Indigenous people are far less likely to reside in such places and instead tend to be more widely scattered in smaller localities across the Basin (Table 3). Exactly half of non-Indigenous residents of the Basin are resident in these towns and cities of over 10,000 persons compared to only 37 per cent of Indigenous residents. Accordingly, the overall Indigenous share of the region’s population rises to 4.2 per cent away from these centres compared to just 2.5 per cent within them.

As for distribution by State and Territory jurisdiction, the largest share of the Basin’s total population is resident within New South Wales (40%) followed by Victoria with 29 per cent (Table 4). However, the Indigenous population is even more concentrated in New South Wales which accounts for as much as
two-thirds of the Basin’s Indigenous residents. Accordingly, the Indigenous share of total population is also highest in New South Wales (5.7%).

As the scale of analysis is reduced further, particular areas of the Basin, and particular localities within it, are seen to be predominantly comprised of Indigenous people. For example, two-thirds (64%) of the population of Wilcannia is Indigenous, and increasingly so—a phenomenon reported for other centres along the Darling River (Ross & Taylor 2000). In addition, there are 35 discrete Indigenous communities within the Basin (ABS 2002a). Among those identified by the ABS in the 2001 Community Housing and Infrastructure Needs Survey (CHINS) are Balranald Reserve, Gerard, Willow Bend, Boona Road (Condobolin), Gunnedah Hill, Erambie, Namatijira, New Merinee (Dareton), Moonacullah, Cummerangunga, Boggabilla, Toomelah, Three Ways, Gulargambone, Maclean, Mehi Crescent, Stanley Village, Kalparrin, Camp Coorong, Raukkan (Point Mcleay), Grong Grong, Peak Hill Mission, Walhallow Reserve, Wamba Reserve, Brungle, Summervale, Minnon, Nanima Reserve, Warrali Mission, and Mallee. However, many other communities on Aboriginal freehold and leasehold land also exist such as Enngonia, Namoi, Gingie, Goodooga, Murrin Bridge, Boorowa, Robinvale, Cummerangunga, and Ngarrinyerri. All of these communities represent Indigenous living areas formerly

### Table 3. Indigenous and non-Indigenous population by settlement size category in the Murray–Darling Basin, 2001

<table>
<thead>
<tr>
<th>Settlement size</th>
<th>Indigenous</th>
<th>Non-Indigenous</th>
<th>Indigenous % distribution</th>
<th>Non-Indigenous % distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;10,000</td>
<td>25,746</td>
<td>983,970</td>
<td>37.5</td>
<td>50.2</td>
</tr>
<tr>
<td>&lt;10,000</td>
<td>42,910</td>
<td>976,129</td>
<td>62.5</td>
<td>49.8</td>
</tr>
<tr>
<td>Total</td>
<td>68,656</td>
<td>2,028,755</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Source: ABS 2002b.

### Table 4. Indigenous and non-Indigenous ERPs of the Murray–Darling Basin by State and Territory, 2001

<table>
<thead>
<tr>
<th>State</th>
<th>Indigenous</th>
<th>Non-Indigenous</th>
<th>Total</th>
<th>Indigenous % of total pop</th>
<th>% of Indigenous pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>New South Wales</td>
<td>45,781</td>
<td>763,372</td>
<td>809,153</td>
<td>5.7</td>
<td>66.7</td>
</tr>
<tr>
<td>Victoria</td>
<td>7,839</td>
<td>588,109</td>
<td>595,948</td>
<td>1.3</td>
<td>11.4</td>
</tr>
<tr>
<td>Queensland</td>
<td>9,067</td>
<td>226,713</td>
<td>235,780</td>
<td>3.8</td>
<td>13.2</td>
</tr>
</tbody>
</table>

Source: ABS Demography section Canberra, ERP customised tables.
constituted as government and mission settlements, or reserves. As such, they are most numerous in New South Wales and in the Murray lands of South Australia. While these communities are generally small and widely dispersed on small parcels of land, they form an important element of the cultural landscape of the Basin.

At the broad sub-regional level, Fig. 1 reveals that the Indigenous share of population varies substantially across the Basin from less than 1 per cent in many parts of Victoria, between 1 per cent and 5 per cent along the Murray and Murrumbidgee, to more than 8 per cent along the Darling and other northern river

---

**Fig. 1. Indigenous percentage share of total population: Murray–Darling statistical divisions, 2001**

![Map showing the Indigenous percentage share of total population for Murray–Darling statistical divisions, 2001.](image)

- Less than 1%
- Between 1 and 2%
- Between 2 and 3%
- Between 3 and 8%
- More than 8%

systems. There are historic reasons for this pattern. From the perspective of Aboriginal incorporation into wider social and economic structures, much of the Basin (especially in the northern half), has intermediate status. It was, and remains, sufficiently remote from mainstream social and economic life as to enable the retention and development of wholly Aboriginal institutions and domains. At the same time Aboriginal people have long been drawn into the wider world through a mix of mechanisms including child removals, resettlement schemes, employment and social mobility. In many ways, the historical experience within the Basin straddles the boundary between Rowley’s (1971) ‘colonial’ and ‘settled’ Australia, displaying economic and demographic aspects of the former and administrative and social tendencies of the latter.

Fig. 2. Indigenous population change, 1996–2001

Source: ABS Demography section Canberra, 2001 Census-based customised ERPs.
POPULATION CHANGE

Population change within the Basin occurs as the net consequence of births over deaths and movers in and movers out over a specified period of time. For the Indigenous population, growth in official numbers can also vary according to the consistency with which individuals are identified on census forms as Indigenous.

Fig. 2 shows the percentage rate of change in the Indigenous estimated resident population across statistical divisions of the Basin between 1996 and 2001. The first point to note is that the Indigenous population

---

**Fig. 3. Non-Indigenous population change, 1996–2001**

![Map showing population change in statistical divisions of the Basin between 1996 and 2001.


---
increased in all regions. The second point is that growth rates varied considerably between different parts of the Basin with little discernable pattern. Thus, very high growth rates of over 28 per cent were recorded in regions as varied as the Australian Capital Territory, the Darling Downs, Far West New South Wales and the Loddon Valley in northern Victoria, while relatively low growth of only 4 per cent was recorded in the Murray SD which runs along the New South Wales bank of the river from Tumbarumba to Wentworth.

Apart from much higher Indigenous growth, the main point of contrast between Indigenous and non-Indigenous population change is the fact that the non-Indigenous population in many parts of the Basin

---

**Fig. 4. Non-Indigenous net migration rates, 1996–2001**


---

**Greater than 100 out per thousand**
**Between 50 and 100 out per thousand**
**Between 30 and 50 out per thousand**
**Between 0 and 30 out per thousand**
**Between 0 and 30 in per thousand**
has actually declined in recent years (Fig. 3). Thus, the great swathe of country across Northern New South Wales from Tamworth to Broken Hill has experienced an overall decline in non-Indigenous residents, as has the Wimmera district of western Victoria. Elsewhere, growth rates were marginally above average, with the main exceptions being the stretch of Victoria from the Loddon to the Goulburn valleys, the Darling Downs in south east Queensland, and especially south-east New South Wales around Canberra and the Murray lands of South Australia.

**Fig. 5. Indigenous net migration rates, 1996–2001**

One reason for the marked contrast in growth rates between the Indigenous and non-Indigenous populations of the Basin is differential net internal migration. Fig. 4 shows the regional pattern of non-Indigenous net migration based on all movement between regions within the Basin as well as between them and the rest of Australia (i.e. all areas outside of the Basin). Aside from south east New South Wales and the Loddon valley area of Victoria, all regions of the Basin lost non-Indigenous population due to net internal migration with the heaviest losses (more than 10% of the population) experienced in far west New South Wales and south-west Queensland. Overall, the net balance of non-Indigenous population exchange between the Murray–Darling Basin as a whole and the rest of Australia was 225,000 out and 194,000 in, leading to a net loss of 31,000 persons. However, the Basin also gained 28,000 non-Indigenous migrants from overseas between 1996 and 2001 (although almost half of these went to Canberra), and while these should also form part of the demographic balancing equation, what is not known for a calculation of net impact is how many prior residents of the Basin emigrated overseas. Either way, though, the result remains a net migration loss.

As with the non-Indigenous population, the overall exchange of Indigenous population between the Basin and the rest of Australia was negative but only slightly, with some 6,100 Indigenous people moving in and around 6,500 moving out, leading to a net loss of 400 persons. The pattern of net gains and losses between different regions of the Basin is quite striking (Fig. 5). All the net gains in Indigenous population were confined to Victorian regions of the Basin, along the Murray Lands in South Australia and in south east New South Wales, while all the regions to the north of the Murray in New South Wales and Queensland experienced net migration loss. Of course, as Fig. 2 reveals, this pattern of net migration loss did not impair Indigenous population growth, except perhaps along the New South Wales side of the Murray valley.

Of particular interest for social and economic policy is the rate at which different age groups in the Murray–Darling Basin lose or gain population to or from the rest of Australia. This is shown for Indigenous and non-Indigenous populations in Fig. 6 and quite distinct patterns emerge. First of all, both Indigenous and non-Indigenous populations in the Basin experience a net loss of young people between the ages of 10 and 29. However, the movement out to the rest of Australia of non-Indigenous youth is far greater especially between the ages of 20 and 24. Thereafter, beyond age 30 net migration for the Indigenous population is more or less in balance with very slight non-Indigenous gains between 30 and 39 and slight loss between 40 and 54, while the Indigenous population displays slight net gains between the ages of 50 and 69. This pattern of youthful out-migration of Indigenous people from non-metropolitan areas towards cities, with a corresponding movement back again in later years has been noted before, with access to jobs and training seen as contributing to movement into the city, and lower costs of family housing seen as stimulating a movement back in later years (Gray 1989).

While Indigenous and non-Indigenous five-year mobility rates therefore display the same life-cycle variations (Fig. 6), a key point of difference is the much flatter age variation in the Indigenous profile. For the population in general, the high rates in the age profile of migration between 15 and 29 years has been firmly linked to the combined influence of departure from the parental home, the start of tertiary education, entry into the labor force and the establishment of independent living arrangements. Thus, the much flatter
Fig. 6. Age pattern of Indigenous and non-Indigenous net migration between the Murray–Darling Basin and the rest of Australia, 1996–2001

The profile of Indigenous mobility may reflect the much lower labor force participation observed for Indigenous people at ages when job search and job mobility are primary factors in population movement for the rest of the population. It may also be a measure of the fact that the Community Development Employment Projects (CDEP) scheme, which accounts for almost one-third of the Indigenous workforce in the Basin, overrides the need to move away (Taylor & Bell 2004). Also likely to constrain Indigenous decisions to move is the high level of dependence on public rental housing which substantially limits the choice of residential options (Gray 2004).

For the non-Indigenous population of the Basin the substantial movement of younger people out of the region is no doubt associated with education, training and job search, but what is interesting in terms of long-term population replacement is the general lack of reciprocal movement back into the Basin in later years leading to the prospect of progressive decline in the non-Indigenous population. This is significant in terms of the sustainability of natural resource management programs and the need to enhance Indigenous participation as it suggests that Indigenous people are the more likely to retain a long-term residence in the Basin, at least trend-wise.
A basic knowledge of the age and sex structure of the population is vital in establishing rates for social indicators as well as in discussing health, housing, education, employment and training needs. Fig. 7 shows the distribution by broad age-group of Indigenous and non-Indigenous people using post-censal 2001 ERP data.

Clearly, the Indigenous population of the Basin has a much younger age profile that that of the non-Indigenous population. The Indigenous profile reflects a population with relatively high fertility and potential for further expansion due to natural increase. When viewed in tandem with Fig. 6, it also reflects relatively high adult mortality. The non-Indigenous profile, on the other hand, is much older and ageing and the depleting effects of out-migration among young adults are clearly seen. As a consequence, the Indigenous population, in comparison with the non-Indigenous population, is over-represented at all ages under 35 years, and especially below 20 years, and under-represented at older ages above 35 years, especially amongst those aged 45 years and over.

The significance of these age data for policy is best revealed by grouping them into age ranges that typically form the target of policy intervention as shown in Table 5, although this is not as precise as it might be if ABS estimates allowed. For example, compulsory school age across the five jurisdictions encompassed by the Basin ranges from 5 to 16 years inclusive, yet with ABS estimates we are obliged to use ages 5–14. Accordingly, the infant years leading up to school-age include those aged 0–4 inclusive. The transition years from school to work are indicated as 15–24 years, while the prime working age group is identified as ages 25–54. Typically in the Australian workforce, and in International Labour Organisation (ILO) convention, working age extends to 64 years with those over 65 years representing the aged and pensionable. However,

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Indigenous</th>
<th>Non-Indigenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>0–4</td>
<td>9,554</td>
<td>111,319</td>
</tr>
<tr>
<td>5–14</td>
<td>18,635</td>
<td>302,227</td>
</tr>
<tr>
<td>15–24</td>
<td>11,951</td>
<td>261,808</td>
</tr>
<tr>
<td>25–54</td>
<td>23,710</td>
<td>839,201</td>
</tr>
<tr>
<td>55+</td>
<td>4,806</td>
<td>451,978</td>
</tr>
<tr>
<td>Total</td>
<td>68,656</td>
<td>1,966,533</td>
</tr>
</tbody>
</table>

Source: ABS Demography section Canberra, ERP customised tables.

AGE AND SEX

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given the evidence for premature ageing in the Aboriginal population in the context of high levels of adult mortality and morbidity (Divarakan-Brown 1985; Earle & Earle 1999), this has been set here at the earlier age of 55 years and over.

Thus, it is estimated that there are just over 9,000 resident Indigenous infants and almost 19,000 in the age group broadly corresponding to the years of compulsory schooling. Of interest is the substantial difference in age distribution by social policy grouping between the Indigenous and non-Indigenous populations. Issues to do with education (both pre-school, primary, and secondary), and then training and transition into the workforce as well as housing for new families, are far more significant for the Indigenous population given their greater concentration in those age groups where such matters are to the fore. By contrast, almost one quarter of the non-Indigenous population is over 55 years where retirement and family dissolution are primary concerns.

**POPULATION PROJECTIONS**

State and local government planning authorities routinely develop future population scenarios and often seek budgetary allocations on the basis of anticipated needs for human services and infrastructure. The key element in this process is the production of small-area population projections or forecasts (Howe 1999). While the ABS provides official projections of State, Territory, Local Government Area (LGA) and SLA
populations, individual States and Territories also produce regional and local area projections, down to LGA level or below (Bell 1992). These are made using a wide range of demographic models and techniques (Bell 1997), but share a common goal of endeavouring to provide realistic assessments of the likely future size, composition and distribution of population.

Thus, for the SLAs contained within the Murray–Darling Basin, estimates and projections for the total population by five-year age-group and sex already exist covering the period 1999 to 2019 (ABS 2003), and these are utilised here. ABS estimates of Indigenous populations in the same SLAs are also available for 2001, but projections are not. The main purpose of the present exercise, then, is to produce preliminary Indigenous population projections for these SLAs and, by doing so, to provide the first indicative projections of Indigenous and non-Indigenous populations for the Basin. Before proceeding, though, a note of caution is in order.

This concerns the fact that ‘non-Indigenous’ population change is calculated here by subtracting Indigenous estimates from those for the total population. Given that the assumptions underlying the development of estimates for the Indigenous and total populations are inevitably quite different, the creation of a residual (non-Indigenous) population in this way is statistically problematic. Any estimation and projection of a ‘non-Indigenous’ population would need to be guided by its own unique underlying assumptions, and the development of these is beyond the scope of the present exercise. Indeed, questions surrounding the social construction of such a population raises questions as to whether it is statistically possible at all.

Nevertheless, it is important to explore mechanisms for monitoring differential components of population change for Indigenous and non-Indigenous residents of the Basin as these subgroups in aggregate display quite different socioeconomic and cultural dispositions. Employment, mostly in agriculture, retailing, and the services sector, remains a key reason for non-Indigenous residence in the Basin with net migration trends highly sensitive to changes in prevailing economic conditions (Bell & Maher 1995). By contrast, Indigenous residents are less responsive in this way to market stimuli, partly as a consequence of their more marginal attachment to the labour market, but also because of their cultural attachment to country.

Methods

In developing Indigenous population projections for the period 2001–2016, two methods are deployed to create two projections series—a high series and a low series. The low series projection is developed using the cohort component method in line with standard ABS practice. The high series projection is developed by holding observed 1996–2001 age-specific Indigenous ERP growth rates constant for the projection period.

The projection assumptions regarding the cohort components of population change refer only to demographic factors. Thus, they refer to natural population change only and do not allow for any of the non-demographic factors that are due to variable enumeration of Indigenous persons that have so influenced Indigenous population growth since the 1971 Census. As such, the results produced by the cohort component method are conservative. The assumptions applied are as follows:
Fertility

National level age specific fertility rates (ASFRs) for Indigenous women as derived from Kinfu and Taylor’s (2002: 18) analysis of 2001 Census data were applied and held constant for the projection period. These births to Indigenous women were augmented by Indigenous births to non-Indigenous women in the Basin again using Kinfu and Taylor’s (2002: 19) census-based estimates.

Mortality

Conventional practice in small area population forecasting suggests that State/Territory-level deaths data are most suited for projection purposes. However, because the Basin straddles several State/Territory boundaries questions arise as to how to proceed. The best solution is to apply State-level survival rates weighted for population share. However for the preliminary projections provided here the national Indigenous life table as developed by Kinfu and Taylor (2002) has been applied.

Net migration

Migration is the most troublesome of the components of population change because it can substantially impact on local population growth, yet it is difficult to acquire reliable data. Nonetheless, in using a cohort component methodology it is necessary to derive a set of age and sex specific net migration rates (balance of movements into the Basin and movements out). These are drawn from 2001 Census data on the 1996 residential location of 2001 usual residents of the Basin.

For the high series projection, age-specific growth rates based on change in the national Indigenous ERP between 1996 and 2001 (adjusted for net migration out of the Murray–Darling Basin) are assumed to remain fixed for the projection period. While this is an improbable outcome, it nonetheless does allow all the influences on Indigenous population change (fertility, mortality, net migration, and non-demographic factors) to be incorporated. As such, it provides a likely upper bound on future estimates.

PROJECTION RESULTS

High and low series projections to 2016 for the Indigenous and implied non-Indigenous populations of the Basin are shown in Table 6 together with implied growth rates and change in population levels. If demographic factors alone were responsible for future change in the Indigenous population of the Basin (as in the low series projection), then growth will be modest at 1.5 per cent per annum, leading to a population of 84,543 by 2016. However, experience since the 1971 Census has shown that non-demographic factors related to the enumeration of Indigenous people have played a substantial part in contributing to intercensal population growth, not least in regions such as the Murray–Darling Basin (Taylor 2003a). The high series projection is a crude attempt to capture this effect by continuing on the age-specific growth rates in the Indigenous ERP observed between 1996–2001 (adjusted for out-migration from the Basin). This produces a very high growth rate of 4.6 per cent per annum, culminating in a population of 116,551 by 2016. The different growth trends created by the two series are shown in Fig. 8.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total population</strong></td>
<td>1,969,269</td>
<td>2,006,315</td>
<td>37,046</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>Low series (cohort component method)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>68,656</td>
<td>84,543</td>
<td>15,887</td>
<td>1.5</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>1,900,613</td>
<td>1,921,772</td>
<td>21,159</td>
<td>0.1</td>
</tr>
<tr>
<td><strong>High series (age-specific growth rate method)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>68,656</td>
<td>116,551</td>
<td>47,895</td>
<td>4.6</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>1,900,613</td>
<td>1,882,931</td>
<td>−17,682</td>
<td>−0.06</td>
</tr>
</tbody>
</table>

Note: a. ERP base for the total population is actually for 30 June 1999 and projection to 2016 is drawn from ABS (2003), produced for the Commonwealth Department of Health and Aged Care.

Fig. 8. High and low series Indigenous population projections: Murray–Darling Basin, 2001–2016
Since the 'non-Indigenous' population is calculated here as the residual between the total and Indigenous populations, the relative effect of the different projection series is quite significant, as illustrated in Fig. 9. Under the low series projection, the non-Indigenous population continues to grow but at a rate that slows to 2011 and then declines to 2016. Under the high series projection, the consequences are far more dramatic with growth declining after 2006, and turning negative after 2011. Using the low series projections, the Indigenous population rises from 3.4 per cent in 2001 to 4.2 per cent of the total Basin population by 2016. Using the high series, the share increases to 5.8 per cent.

Clearly, considerable uncertainty surrounds the projection of future Indigenous and non-Indigenous population levels in the Basin. At this stage, all that can be said is that true levels are likely to fall between the low and high series. This uncertainty is partly a function of the data resources that the analysis has been able to draw upon and greater precision would be afforded by improved data access. As a consequence of this uncertainty, analysis of the changing age composition of the Basin population awaits the development of more refined projections. In the meantime, though, preliminary estimation of the impact of population growth on future employment needs is provided below.

<table>
<thead>
<tr>
<th>Employment/population ratio</th>
<th>Unemployment/population ratio</th>
<th>NILF ratio</th>
<th>Total &gt;15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>CDEP</td>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Census rates in 2001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indigenous</td>
<td>9.6</td>
<td>28.0</td>
<td>12.3</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>0.0</td>
<td>58.8</td>
<td>4.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Employed CDEP</th>
<th>Employed Other</th>
<th>Unemployed</th>
<th>NILF</th>
<th>total &gt;15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous</td>
<td>3,893</td>
<td>11,323</td>
<td>4,977</td>
<td>20,274</td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>n/a</td>
<td>913,156</td>
<td>62,119</td>
<td>577,712</td>
</tr>
</tbody>
</table>

Notes:  
a. The Indigenous rates and levels to do not quite add up to 100% of the estimate of 15+ population indicated in Table 5 because CDEP employment numbers are derived from administrative data.  
b. From CDEP participant records.


REGIONAL LABOUR FORCE STATUS

Table 7 shows rates of labour force status drawn from the 2001 Census for Indigenous and non-Indigenous adults counted as usual residents of the Basin. These rates are applied to the post-censal estimate of usual resident adults drawn from Table 5 to derive implied levels of labour force status for 2001. Three standard indicators of labour force status are presented, although these are modified here as simple proportions of the population aged 15 years and over:

- employment/population ratio, representing the percentage of persons aged 15 years and over who indicated in the census that they were in employment (either in CDEP mainstream work) during the week prior to enumeration;

- unemployment rate, this is expressed as those who indicated that they were not in employment but had actively looked for work during the four weeks prior to enumeration, as a percentage of those aged 15 years and over;

- labour force participation rate, representing persons in the labour force (employed and unemployed) as a percentage of those of working age—shown here in its converse form as the per cent of adults who are not in the labour force (NILF).
Just over one-third of Indigenous adults (37.6%) are employed, although one-quarter of these are employed in the CDEP scheme, leaving a question mark over their real labour force status. Translating these rates to estimates of employment levels produces a total estimate of Indigenous employment of 15,216 with 3,893 of these in CDEP. This means that the mainstream employment rate is only 28 per cent. In contrast, almost 60 per cent of non-Indigenous adults are employed in the mainstream labour market. Accordingly, Indigenous unemployment is relatively high (12% compared to the non-Indigenous 4%), while a substantial difference emerges in the proportions of the adult population that lie outside of the labour force (50% of Indigenous adults compared to 37% of non-Indigenous adults). Once again, translating these rates into population estimates suggests that there are almost 5,000 Indigenous people unemployed, and a staggering 20,274 outside of the labour force—a figure far greater than for those employed.

This relatively poor labour force status recorded for Indigenous peoples in the Basin is contrary to their historic position within the regional labour market. From the time that farmers and pastoralists first exploited the lands and waters of the Basin, the success of their enterprise depended on a regular supply of Aboriginal labour—either full-time or seasonal—working as stockmen, fruit pickers, general agricultural labourers, and domestic workers. From the 1960s onwards, and especially since the collapse of full employment in Australia in 1974, the demand for Aboriginal labour throughout the Basin was steadily eroded by structural change in the industry and associated mechanisation (Castle & Hagan 1984). One analyst of the impact on rural-based Aboriginal peoples has described this as a move from underemployment to unemployment (Morris 1983).

As for the future, if we take the low series population projection as a preliminary measure of future numbers, it can be conservatively estimated that the Indigenous population of working-age in the Murray–Darling Basin will increase by 44 per cent from 40,467 in 2001 to 58,260 in 2016. Because of this expansion, just to keep the employment to population ratio at its currently reported low level of 37.6 per cent would require an increase in the numbers employed from 15,216 in 2001 to 21,381 by 2016—an extra 6,165 jobs. However, if the aim is to move beyond the status quo and actually close the gap between Indigenous and non-Indigenous employment status in the region then a total of up to 34,257 Indigenous people would need to be in work by 2016—more than double the number employed in 2001, including in CDEP. This job needs scenario is consistent with that estimated for Indigenous people generally in Australia (Hunter & Taylor 2004).

**INDUSTRY AND OCCUPATION**

In the final analysis, employment provides a means to personal income generation, while the amount generated is determined largely by occupational status. In turn, the availability of particular occupations within a region is partly related to the industry mix of economic activities. Thus, the relative distribution of Indigenous and non-Indigenous employment by industry and occupational category is a vital feature of participation in the regional labour market.

The five-yearly census is the sole comprehensive source of Indigenous employment data. This classifies those employed according to the Australian and New Zealand Standard Industry Classification (ANZSIC) and the
Australian Standard Classification of Occupations (ASCO). Using these classifications, the relative distribution of Indigenous workers in the Basin is shown in Figs 10 and 11 according to broad industry and occupational categories. It should be noted that the analysis here is focused on that part of the Murray–Darling Basin that lies outside of the ACT. This is an attempt to reflect the labour market that prevails over the bulk of the Basin’s geographic area without the distorting influence of the unique labour market conditions that are found in the Capital Territory.

Clearly, the distribution of Indigenous employment by industry division is quite different from that of non-Aboriginal workers in the Basin. Indigenous workers are over-represented in government administration, education, health and community services, and personal and other services. This partly reflects the nature of CDEP work, but it also underlines the importance of niche jobs available via the provision of customised services to Indigenous communities. Clearly, the two major industries in the Basin are agriculture and

![Fig. 10. Distribution of Indigenous and non-Indigenous employment by industry division: Murray–Darling Basin, 2001](image)


retailing, and in both of these industries Indigenous people are substantially underrepresented. As a statistical measure of industry segregation, almost one-fifth (18%) of Indigenous workers would have to change their industry of employment in order to achieve a distribution equivalent to that of non-Indigenous workers. This indicates slightly less industry segregation in the Basin than the 23 per cent recorded for Indigenous Australians as a whole (Hunter 2004: 18).

As for the relative distribution of employment by occupational group, this underlines the wide gap in professional and trade qualifications between Indigenous and non-Indigenous workers. More than one quarter of Indigenous workers are classified as labourers, no doubt reflecting the prominence of CDEP work, and Indigenous people are most notably absent from professional and managerial positions, although the latter partly reflects the fact that many farmers are classified occupationally as managers. Overall, occupational segregation is much greater than industry segregation with as many as 41 per cent of

Fig. 11. Distribution of Indigenous and non-Indigenous employment by occupational group: Murray-Darling Basin, 2001

<table>
<thead>
<tr>
<th>Industry Division</th>
<th>Non-Indigenous</th>
<th>Indigenous</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Managers and Administrators</td>
<td>15%</td>
<td>25%</td>
</tr>
<tr>
<td>2. Professionals</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>3. Associate Professionals</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>4. Tradespersons and Related Workers</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>5. Advanced Clerical and Service Workers</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>6. Intermediate Clerical, Sales and Service Workers</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>7. Intermediate Production and Transport Workers</td>
<td>10%</td>
<td>5%</td>
</tr>
<tr>
<td>8. Elementary Clerical, Sales and Service Workers</td>
<td>15%</td>
<td>5%</td>
</tr>
<tr>
<td>9. Labourers and Related Workers</td>
<td>10%</td>
<td>5%</td>
</tr>
</tbody>
</table>


Indigenous workers needing to shift their broad occupational group in order to achieve the same distribution as non-Indigenous workers. This is twice the degree of occupational segregation of 20 per cent recorded for Indigenous people as a whole in Australia (Hunter 2004: 20) and no doubt reflects the prominence of a single industry (agriculture) in providing the bulk of jobs for non-Indigenous residents of the Basin.

The data in Figs 10 and 11 reveal only the broad outlines of the regional labour market. Each of these classifications can be disaggregated into more detailed descriptions of industry and occupation to in a way that highlights the particular jobs that Indigenous and non-Indigenous workers congregate in. For example, the ANZSIC can be broken down into 635 individual industry classes, while the ASCO is reducable to 340 occupational unit groups. In identifying key jobs in the Murray–Darling, these are the categories utilised here.

When examined at this level of detail, the distribution of employment in the Basin, for both Indigenous and non-Indigenous workers, is highly concentrated into relatively few industries and occupations. Table 8 shows the top 20 industry classes (based on numbers employed) listed in rank order. These top 20 out of 635 industries account for as much as one-third of all non-Indigenous employment, and approaching half (41%) of all Indigenous employment. Industries marked in bold indicate those that are unique to the Indigenous and non-Indigenous lists; all others are shared. Thus, while just over half of the top 20 employing industries are common to both Indigenous and non-Indigenous workers (local government administration, primary education, hospitals etc.), there are notable differences indicating significant structural breaks in the labour market. For example, it is clear that various major agricultural industries (mixed farming, beef, dairy, grain and viticulture) dominate non-Indigenous employment with only one area of agricultural employment (sheep farming) listed in the Indigenous top 20 (although meat processing might also be added). At a stroke, this indicates that a significant contribution to the relatively poor labour force status of Indigenous people is their failure to achieve parity participation in the Basin’s key economic sector. Likewise, automotive repair and house construction are other major regional employers, but Indigenous workers are more likely to be engaged in service industries such as child care and community services.

Segmentation and concentration in the regional labour market is even more apparent in regard to occupation. Table 9 reveals that the top 20 out of 340 occupations account for fully 42 per cent of both Indigenous and non-Indigenous workers, while the lists of occupations reveal significant differences. Though certain major occupations in the Basin (cleaners, farm hands, sales assistants, and truck drivers) are common to both populations, Table 10 also reveals a skills divide in occupational distribution. Thus, non-Indigenous workers are registered nurses and secondary school teachers, whereas Indigenous workers are nursing assistants and education aides, while labouring occupations do not appear in the non-Indigenous top 20.

One observation regarding these employment data concerns the role of natural resource management programs and activities in generating work. On the one hand, it is difficult to discern from census data (even at the detailed level) just where such impacts lie within the labour market. At the same time, to the extent that such programs target those on the land and using the land and water (i.e. farmers), the relative
absence of Indigenous people from pastoral and agricultural jobs suggests that such programs also by-pass Indigenous interests. Previous work on Indigenous participation in biodiversity programs suggests that to the extent that this exists at all, there is likely to be heavy concentration of Indigenous people in Indigenous-specific programs (Gillespie, Cooke & Taylor 1997). The other point to note is that the census is ill-equipped to identify and record the sorts of activities that constitute Indigenous customary practices in regard to natural resource management, and which may be defined as legitimate forms of work by many Indigenous people. There is a need, therefore, for such data to be gathered at the local, nation-level, and then presented as part of a potential profile of the regional labour market.


<table>
<thead>
<tr>
<th>Indigenous Industry</th>
<th>Number of Indigenous Employees</th>
<th>Non-Indigenous Industry</th>
<th>Number of Non-Indigenous Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Government Administration</td>
<td>757</td>
<td>Grain–Sheep and Grain-Beef Cattle Farming</td>
<td>20,628</td>
</tr>
<tr>
<td>Non-Residential Care Services, nec&lt;sup&gt;a&lt;/sup&gt;</td>
<td>478</td>
<td>Hospitals</td>
<td>18,766</td>
</tr>
<tr>
<td>Primary Education</td>
<td>379</td>
<td>Supermarket and Grocery Stores</td>
<td>17,948</td>
</tr>
<tr>
<td>Supermarket and Grocery Stores</td>
<td>269</td>
<td>Primary Education</td>
<td>16,779</td>
</tr>
<tr>
<td>Hospitals</td>
<td>263</td>
<td>Beef Cattle Farming</td>
<td>14,022</td>
</tr>
<tr>
<td>Central Government Administration</td>
<td>253</td>
<td>Secondary Education</td>
<td>13,940</td>
</tr>
<tr>
<td>State Government Administration</td>
<td>232</td>
<td>Accommodation</td>
<td>12,853</td>
</tr>
<tr>
<td>Road Freight Transport</td>
<td>196</td>
<td>Road Freight Transport</td>
<td>12,698</td>
</tr>
<tr>
<td>Employment Placement Services</td>
<td>192</td>
<td>Grain Growing</td>
<td>10,967</td>
</tr>
<tr>
<td>Gardening Services</td>
<td>192</td>
<td>Cafes and Restaurants</td>
<td>10,954</td>
</tr>
<tr>
<td>Accommodation</td>
<td>191</td>
<td>Sheep Farming</td>
<td>10,900</td>
</tr>
<tr>
<td>Takeaway Food Retailing</td>
<td>186</td>
<td>Local Government Administration</td>
<td>10,395</td>
</tr>
<tr>
<td>Secondary Education</td>
<td>180</td>
<td>Takeaway Food Retailing</td>
<td>10,221</td>
</tr>
<tr>
<td>Meat Processing</td>
<td>168</td>
<td>Dairy Cattle Farming</td>
<td>8,741</td>
</tr>
<tr>
<td>Cleaning Services</td>
<td>157</td>
<td>Sheep-Beef Cattle Farming</td>
<td>8,639</td>
</tr>
<tr>
<td>Sheep Farming</td>
<td>156</td>
<td>Automotive Repair and Services</td>
<td>7,424</td>
</tr>
<tr>
<td>Cafes and Restaurants</td>
<td>143</td>
<td>Grape Growing</td>
<td>7,271</td>
</tr>
<tr>
<td>Community Services, undefined</td>
<td>143</td>
<td>Non-Residential Care Services, nec</td>
<td>6,896</td>
</tr>
<tr>
<td>Interest Groups, Nec</td>
<td>141</td>
<td>Central Government Administration</td>
<td>6,739</td>
</tr>
<tr>
<td>Child Care Services</td>
<td>134</td>
<td>House Construction</td>
<td>6,577</td>
</tr>
<tr>
<td>Total employment</td>
<td>4,810</td>
<td>Total employment</td>
<td>233,358</td>
</tr>
<tr>
<td>Per cent of workforce</td>
<td>41.2</td>
<td>Per cent of workforce</td>
<td>34.4</td>
</tr>
</tbody>
</table>

Notes:  
<sup>a</sup> Unique categories in bold.  
<sup>b</sup> Nec = not elsewhere classified.  
EMPLOYMENT AND NON-EMPLOYMENT INCOME

One feature of the regional demography that has some impact on the analysis of Indigenous economic status is the fact that a high proportion of Indigenous households include non-Indigenous members, typically as spouses. Overall in Australia 69 per cent of Indigenous couple families include a non-Indigenous partner. While an equivalent figure has not been extracted for the Murray–Darling Basin the indication is that the proportion is lower but nonetheless still substantial with Peterson and Taylor (2002), for example, reporting a figure of 43 per cent for western New South Wales. Consequently, a number of standard economic measures...
such as household and family income as well as population-based economic dependency ratios, are difficult, if not impossible, to construct meaningfully for the Indigenous population of the basin. For this reason, the focus in profiling income measures is on personal income alone.

The most comprehensive source of personal income data for the Basin based on a consistent methodology is available from the ABS census. While the gross income reported in the census is intended to include family allowances, pensions, unemployment benefits, student allowances, maintenance, superannuation, wages, salary, dividends, rents received, interest received, business or farm income, and worker’s compensation received, whether all such sources are actually reported is unknown. However, one distinct advantage of census data is that it provides a means by which an estimate of relative dependence on income from employment and non-employment sources can be derived. This is done simply by cross-tabulating data on income against labour force status. The analytical value here is based on an assumption that by isolating non-employment income we can derive a proxy indication of the level of dependence on welfare-related payments. Accordingly, Table 10 shows Indigenous and non-Indigenous annual average personal incomes in this way. While income from employment obviously exceeds that from other sources, average Indigenous income from employment is only 77 per cent of the non-Indigenous average reflecting the lower occupational status of much Indigenous employment, including CDEP.

### Table 10. Indigenous and non-Indigenous annual average personal income by labour force status: Murray–Darling Basin, 2001

<table>
<thead>
<tr>
<th></th>
<th>Employed</th>
<th>Unemployed</th>
<th>NILF</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indigenous (1)</td>
<td>$26,423</td>
<td>$10,747</td>
<td>$11,693</td>
<td>$17,659</td>
</tr>
<tr>
<td>Non-Indigenous (2)</td>
<td>$34,146</td>
<td>$9,847</td>
<td>$12,064</td>
<td>$25,542</td>
</tr>
<tr>
<td>Ratio (1/2)</td>
<td>0.77</td>
<td>109.1</td>
<td>0.97</td>
<td>0.69</td>
</tr>
</tbody>
</table>

Source: Calculated from ABS 2001 Census of Population and Housing customised usual residence tables.

GROSS EMPLOYMENT AND NON-EMPLOYMENT INCOME

The dollar contribution to annual regional income from employment and non-employment sources estimated from 2001 Census data is shown in Table 11, including the ACT. According to these calculations, the total gross annual personal income accruing to adult residents of the Basin in 2001 amounted to $35 billion. However, only 1.6 per cent of this ($557m) went to Indigenous residents despite the fact that they accounted for 2.9 per cent of the adult population up to the age of 65 years. The inclusion or otherwise of the ACT in these calculations is an issue as it accounts for almost 25 per cent of the total personal income. Of equal interest is the fact that only 1.2 per cent of the total regional employment income accrued to Indigenous people. The implications of this are reflected in relative levels of dependency or non-employment income which

<table>
<thead>
<tr>
<th></th>
<th>Indigenous ($)</th>
<th>Non-Indigenous ($)</th>
<th>Total ($)</th>
<th>Indigenous % share of income category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td>345m</td>
<td>28b</td>
<td>28.4b</td>
<td>1.2</td>
</tr>
<tr>
<td>Non-employment</td>
<td>212m</td>
<td>6.1b</td>
<td>6.3b</td>
<td>5.2</td>
</tr>
<tr>
<td>Total</td>
<td>557m</td>
<td>34.5b</td>
<td>35b</td>
<td>1.6</td>
</tr>
<tr>
<td>Welfare share</td>
<td>38.0%</td>
<td>19.8%</td>
<td>19.9%</td>
<td>n/a</td>
</tr>
</tbody>
</table>

Source: Calculated from ABS 2001 Census of Population and Housing customised usual residence tables.

contains a substantial ‘welfare’ component of monies from government. As much as 38 per cent of total Indigenous income is attributable to such sources compared to only 19 per cent of non-Indigenous income. If CDEP income were also to be counted as non-employment income owing to its notional link to Newstart Allowance, then the level of Indigenous dependency on welfare income would be higher still.

The stark imbalance between Indigenous population share, income share, and welfare dependence revealed in Table 11 indicates that there are fiscal costs to government of the status quo in relative labour force status. As Eardley (2002: 48) points out with respect to unemployment, in theory these costs are relatively easy to calculate amounting to a tally of expenditure on social security and other government services for the unemployed, plus estimates of the tax revenue that would accrue if the unemployed were in paid employment. With reference to Indigenous unemployment, Hunter and Taylor (2002: 119–20) also add the costs due to CDEP, discouraged workers and the under-employed. In practice, however, Eardley (2002) cautions that the actual calculation of costs is complicated.

For the current exercise, such complexities are avoided. Instead, the simple point from Table 11 is that, in aggregate, Indigenous residents of the Basin are clearly losing out on substantial gross potential employment income, while government is clearly outlaying citizen entitlements beyond expectation if the norm were to apply. At the individual level a somewhat different point can be made — the relatively low average Indigenous employment income means that for many workers the gap between welfare and earned income may be sufficiently low as to discourage job seeking as has been observed more generally for Indigenous people (Hunter & Daly 1998). Thus, from a government perspective, decisions about whether to enhance spending in an attempt to raise the level and status of Indigenous participation in the regional labour market (assuming that such efforts were successful) are not cost neutral — expenditure is either going to be required to raise participation to a level and situation sustainable beyond the life of any program effort, or it is going to be required to support the status quo. Either way, there are fiscal costs, to say nothing of likely additional social costs in terms of sustained high incarceration rates and social exclusion (Hunter & Taylor 2002).
POLICY IMPLICATIONS

Current government policy seeks to achieve ‘practical reconciliation’ between Indigenous and other Australians by focusing on closing the gaps in key social indicators. Reflecting on progress to date over the reconciliation decade of the 1990s, Altman and Hunter (2003) concluded that there was little statistical evidence to suggest a narrowing of the gap in overall socioeconomic status over this period. This finding has subsequently been reinforced by the results of the COAG reporting framework on overcoming Indigenous disadvantage (Commonwealth of Australia 2003), as well as by other recent compilations of official measures of relative Indigenous wellbeing (ABS 2004; ABS/Australian Institute of Health and Welfare 2003). From the admittedly limited evidence presented here in regard to the relative labour force and income status of Indigenous peoples in the Murray–Darling Basin, it would appear that as much remains to be achieved in this region as elsewhere in the country.

As implied above, a feature of current government policy towards Indigenous Australians is a focus on outcome measurement. While there would appear to be a surfeit of statistical information to inform policy on Indigenous social and economic development, such data as collated by the ABS are inevitably presented according to the geography of the ASGC and AIGC, while administrative data (mostly unexplored here) are typically variable in coverage and consistency. In the realm of natural resource management on Aboriginal country in the Murray–Darling Basin, the pressing need is to customise available data as far as possible to match the geography of the basin, and ultimately that of Indigenous nations, at the very least in terms of the relevant catchments that they occupy. Consideration of the full range of social and economic data required for regional and Indigenous nation planning is also required. These issues lie beyond the scope of the present paper. Instead, the material presented simply provides a vignette of select key indicators at a Basin-wide scale in order to establish some basic parameters to assist in guiding development of the Indigenous Action Plan.

While there are obvious differences in regard to the boundedness of regional populations, it is useful to reflect on the experience of the COAG ICCP trial at Wadeye (Taylor 2004) in the Northern Territory to highlight a number of key steps towards facilitating regional planning. First, it is essential to establish the spatial boundaries of governance, or at least rules for inclusion in regional polities, as an essential geographic frame of reference. Presently within the basin, catchment management areas serve this function in terms of natural resource management (NRM) planning, but these appear to have been constituted without any reference to the Indigenous cultural landscape. Second, as at Wadeye, agreement on appropriate polities would then provide for the development of baseline profiles of regional social and economic conditions and aspirations. In the context of NRM, these would include detailed quantification of existing investments and Indigenous participation in NRM programs and activities with the aim of improving social and economic outcomes via enhanced engagement (Altman 2003). Third, it is interesting to note similarity between the proposal under the Murray–Darling Basin Indigenous Action Plan to establish Nation Catchment Research Offices attached to each nation and the Thamarrurr Regional Council’s move under the COAG ICCP at

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Wadeye to establish a Community Information Unit to assist in community planning and capacity building. Once again, the experience at Wadeye reveals that a wide range of data sources can be drawn upon (at least in the Northern Territory context) to inform regional planning processes covering several areas of policy concern including health, education, employment, training, housing and involvement with the criminal justice system. Finally, while there are inevitably issues related to data quality, the essential take-home message for the Indigenous Action Plan from the Wadeye experience is that access to these data requires the acceptance and implementation of a partnership approach to the flow of information on the part of COAG members.
NOTES

1. These Indigenous nations are self-defined autonomous entities comprised of traditional owner family groups that are connected through language and kinship lines and that share unique connections to particular parts of the Basin that are notionally bounded. According to Morgan, Strelein and Weir (2004: 23) they may be viewed as similar to ‘native title groups’ as defined by the Native Title Act 1993. Approximately 30 such nations identify themselves and these have been the subject of engagement by the Murray-Darling Basin Commission since 2003, initially via regional consultative forums and then by a Basin-wide gathering of nations held in Canberra in May 2004.

2. In ABS parlance, discrete communities are defined as geographic locations that are bounded by physical or cadastral boundaries, and inhabited or intended to be inhabited predominantly by Indigenous people (more than 50%), with housing and infrastructure that is either owned or managed on a community basis.
REFERENCES


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