

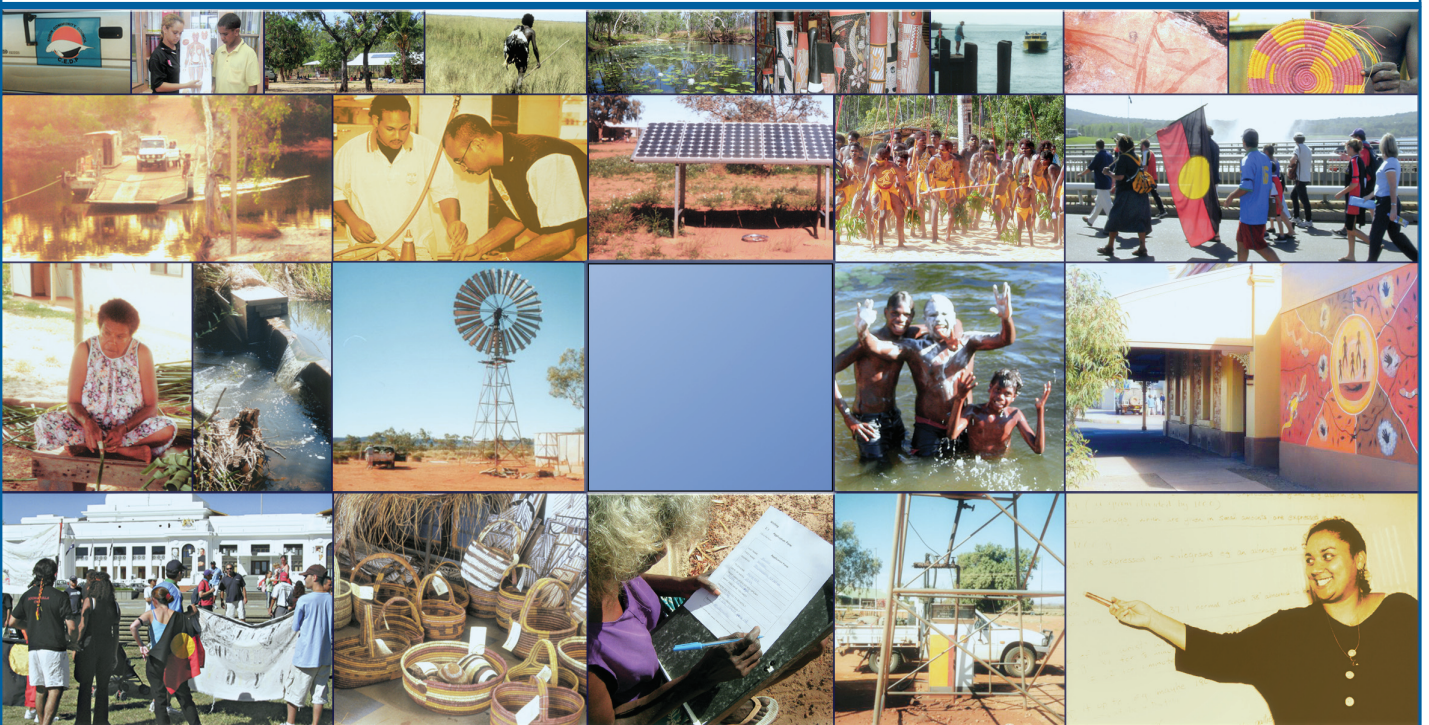
CENTRE FOR ABORIGINAL ECONOMIC
POLICY RESEARCH



Ord Stage 2 and the Socioeconomic Status of Indigenous People in the East Kimberley Region

J. Taylor

CAEPR WORKING PAPER No. 49/2008



ANU COLLEGE OF ARTS & SOCIAL SCIENCES

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Enquiries may be directed to:

The Centre for Aboriginal Economic Policy Research
Hanna Neumann Building #21
The Australian National University
Canberra ACT 0200

Telephone 02-6125 0587

Facsimile 02-6125 9730

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Professor Jon Altman
Director, CAEPR
College of Arts & Social Sciences
The Australian National University
December 2008



ORD STAGE 2 AND THE SOCIOECONOMIC STATUS OF INDIGENOUS PEOPLE IN THE EAST KIMBERLEY REGION

J. TAYLOR

Working Paper No. 49/2008

ISSN 1442-3871

ISBN 0 7315 4948 1

John Taylor is Deputy Director and Senior Fellow at the Centre for Aboriginal Economic Policy Research, College of Arts and Social Sciences, The Australian National University, Canberra.

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ABBREVIATIONS AND ACRONYMS

ABS	Australian Bureau of Statistics
ADM	Argyle Diamond Mine
AEHWs	Aboriginal Environmental Health Workers
AIGC	Australian Indigenous Geographical Classification
AIHW	Australian Institute of Health and Welfare
ANZSCO	Australian and New Zealand Standard Classification of Occupations
ANZSIC	Australian and New Zealand Standard Industrial Classification
ATSIC	Aboriginal and Torres Strait Islander Commission
CAEPR	Centre for Aboriginal Economic Policy Research
CBO	Community Based Order
CDEP	Community Development Employment Projects (scheme)
CHINS	Community Housing and Infrastructure Needs Survey
DEWR	Department of Employment and Workplace Relations
DHS	District High School
DHW	Department of Housing and Works
DIA	Department of Indigenous Affairs (WA)
EHNS	Environmental Health Needs Survey
ERP	Estimated Resident Population
FaHCSIA	Department of Families, Housing, Community Services and Indigenous Affairs
FIFO	Fly-in/Fly-out
GIS	Geographic Information Systems
GROH	Government Regional Officers Housing
GST	Goods and Services Tax
ICC	Indigenous Coordination Centre
ICD 10	International Statistical Classification of Diseases and Related Health Problems 10th Revision
IHO	Indigenous Housing Organisation
ISO	Intensive Supervision Order

KDC	Kimberley Development Commission
KPI	Key Performance Indicator
LGA	Local Government Area
MAP	Multilevel Assessment Program
MCEETYA	Ministerial Council on Education, Employment, Training and Youth Affairs
MG Corporation	Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation
NATSIS	National Indigenous and Torres Strait Islander Survey
OECD	Organisation for Economic Co-operation and Development
OES	Ord Enhancement Scheme
OVAHS	Ord Valley Aboriginal Health Service
PES	Post-Enumeration Survey
PRP	Pre-Primary
RCS	Remote Community School
RPA	Regional Partnership Agreement
SAAP	Supported Accommodation Assistance Program
SLA	Statistical Local Area
SSD	Statistical Sub-Division
STEP	Structured Training and Employment Projects
TAFE	Technical and Further Education
VTE	Vocational and Technical Education
WALNA	Western Australian Literacy and Numeracy Assessment program
WAPC	Western Australian Planning Commission
WDO	Work and Development Order

ABSTRACT

The announcement by the Australian and Western Australian governments of funding for Stage 2 of the Ord irrigation scheme brings into focus the role of the Yawoorroong Miriung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation in developing strategic economic development priorities associated with financial and other benefits flowing from the Ord Final Agreement. It also provides impetus to the Ord Enhancement Scheme which is charged with addressing the adverse social and economic impacts of Ord Stage 1 on Aboriginal people. To assist these processes, this paper provides an assessment of the contemporary social and economic circumstances of Indigenous people in the region implicated by the Ord scheme expansion. By establishing aspects of demography, labour force status, income, education, housing, health and criminal justice, the aim is to provide an essential quantum to discussions of need, aspirations, and regional development capacities for Indigenous, corporate, and government stakeholders. It also provides a benchmark against which subsequent outcomes may be measured.

Keywords: Ord irrigation, East Kimberley, Indigenous social indicators, Regional development, Mirriuwung Gajerrong Corporation.

ACKNOWLEDGMENTS

This study has its genesis in an approach to the author made by Marsden Jacob Pty Ltd as part of their re-examination of the business case for Ord Stage 2. Funding to support the study was provided through Marsden Jacob by the Western Australian government. As a collaborative venture, the compilation of statistical information drew upon the good will and resources of numerous agencies and individuals. Special mention should be made of the collaborative and logistical support provided by the Yawoorroong Miriung Gajerrong Yirrgeb Noong Darwang Aboriginal Corporation (MG Corporation) and the Kimberley Development Commission in Kununurra in the gathering and interpretation of local information. Elsewhere, numerous officials from both the Australian and Western Australian governments made time available to provide access to regional administrative data with a pivotal role played by the Western Australian Department of Premier and Cabinet. I am indebted to Kim Barber for access to vital demographic information. At the ANU Alan Welsh provided valuable advice on population estimates while John Hughes, Hilary Bek, Gillian Cosgrove and Tsvetana Trifonova provided excellent editorial assistance and layout.

FOREWORD

This analysis of the social and economic circumstances of Aboriginal people in the East Kimberley was initiated as part of a re-examination of the business case for Ord Stage 2. Building on previous work in the region, CAEPR was approached by the Western Australian government to provide an update of population needs. This was very timely given the new role assumed by the Yawoorroong Miriuwung Gajerrong Yirrgbe Noong Darwang Aboriginal Corporation (MG Corporation) in providing a structure for MG people to improve our community well-being.

MG Corporation was established as a consequence of the Ord Final Agreement Native Title settlement and one of the functions of our new Corporation is to identify opportunities facing our people and to build responses that are not only appropriate to our needs, but are also designed to maximise our participation in the benefits of development.

While the work in this report was originally conducted to help the Government make decisions about the further development of the Ord Irrigation Scheme, we were happy to assist CAEPR in accessing and interpreting local knowledge and information. As the Ord development proceeds, this research work now provides a useful update of the socioeconomic conditions of the East Kimberley region, including those that are faced by the MG people.

We recognise that many of the issues identified need to be advanced in tandem with our community and a wide range of partners, including the various arms of Government and the private sector.

Our Corporation sees great value in providing good baseline information as the basis for better decisions into the future, and also to allow better monitoring of the situation facing the Aboriginal peoples of the East Kimberley. In building this capacity we acknowledge the opportunity presented via collaboration with our national university.

We strongly believe that the future development of the East Kimberley is integral to the future development of our people. It is with this in mind that we believe it is important that we all recognise the scale and nature of the challenges facing regional development in the area.

MG people want this report to become a useful tool to allow us and our partners to move to the front foot in addressing many of the issues that are outlined. We are keen that this style of information is available for the broader regional debate that is starting, about how Aboriginal people participate in and share the benefits of development of our region.

Edna O'Malley
Chairperson
Yawoorroong Miriuwung Gajerrong Yirrgbe
Noong Darwang Aboriginal Corporation

BACKGROUND

In July 2007, Marsden Jacob Associates (Financial Consultants) commissioned a version of the present analysis to update previous quantitative work on the socioeconomic status of Indigenous peoples in the northern part of the East Kimberley (Taylor 2004) and to attempt to include in this some focus on Miriuwung and Gajerrong people, including those in adjoining areas of the Northern Territory. The purpose was to inform an update of the Business Case for Ord Stage 2.

Part of the background to this Business Case was the negotiation of a landmark agreement between the traditional owners of the Ord valley region and the Western Australian Government in 2005 (the Ord Final Agreement). This was constructed around a proposal by the government to extend the Ord Irrigation Area (Ord Stage 2) and it recognised and settled outstanding Miriuwung and Gajerrong claims to native title rights and provided compensation where loss of such rights had occurred. Two products of this agreement generated a need for new assessment of regional social and economic conditions.

First, the establishment of the Yawoorroong Miriuwung Gajerrong Yirrgeb Noong Dawang Aboriginal Corporation (MG Corporation) charged with developing strategic economic development priorities associated with financial and other benefits flowing from the Ord Final Agreement. Second, the establishment of the Ord Enhancement Scheme (OES) as an integral part of the Ord Final Agreement. The OES is a state-funded program directed by representatives of MG Corporation and the Kimberley Development Commission (KDC) and is charged with addressing, via strategic intervention, the adverse social and economic impacts of Ord Stage 1 and associated development of the town of Kununurra on the lives of Miriuwung and Gajerrong people (Kimberley Land Council 2004).

While information regarding the demographic and economic situation of Indigenous peoples resident in the northern East Kimberley was available from statistical input to the Argyle Agreement process (Taylor 2004), the Ord Stage 2 proposal required additional information as it referred to a somewhat different (wider) geographic area and was capable of being updated using data from the 2006 Census round. This census output, combined with commitments from State and Federal governments to provide key administrative data, laid the foundation for a profile of Indigenous populations potentially implicated by the development of Ord Stage 2.

However, it should be noted that any attempt to establish social and economic characteristics for populations defined on cultural grounds using secondary data sources is thwarted by a lack of relevant data. Indeed, this is part of a growing gap between the scales at which Indigenous polities either seek to, or are required to, organise and plan for their development, on the one hand, and the much larger jurisdictional scales for which statistics are generally made available. Inevitably, such data are only available according to pre-set statistical units usually based on Australian Bureau of Statistics (ABS) geographic classifications, and these rarely, if at all, coincide with the distribution of populations linked by cognatic descent and proprietary rights. Furthermore, while a key element of the Final Ord Agreement concerns the creation of economic

Table 1. Indigenous usual residence counts: East Kimberley region, 2001 and 2006

LGA ^a	2001	2006	Net change	% change
Wyndham-East Kimberley SLA ^b	2,317	2,258	-59	-2.5
Halls Creek SLA	2,909	2,480	-429	-14.7
Ngarliwurru-Wuli Indigenous Area ^c	438	538	100	22.8
Total East Kimberley	5,664	5,276	-388	-6.8

Notes:

- a. Local Government Area.
- b. Statistical Local Area.
- c. The full name is Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area. This is based on the 2001 Australian Indigenous Geographical Classification. (Note, this is a slightly different spelling to that used by the Ngaliwurru-Wuli Association in Timber Creek.)

Source: ABS 2001 and 2006 Census usual residence counts customised tables.

opportunities for Miriuwung and Gajerrong people, it is clear that a development project on the scale of Ord 2 has potential ramifications for a much wider regional population. At the very least, Miriuwung and Gajerrong people will be competing to some degree for jobs and enterprise opportunities with others.

In recognition of these issues, the region adopted here for the analysis of social and economic conditions relevant to the Ord Stage 2 development comprises the East Kimberley Shires of Wyndham-East Kimberley and Halls Creek, together with the adjacent ABS-defined Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area in the Northern Territory. As far as possible, data are presented for this composite region and it is referred to throughout as the 'East Kimberley region' unless otherwise stated. It should be noted that the two East Kimberley Shires also combine to form the ABS' Ord Statistical Sub-Division (SSD) as this configuration is sometimes applied, as is the Kununurra Indigenous Coordination Centre (ICC) Region which amounts to the same thing. This relatively broad definition of the area potentially impacted by the Ord 2 development is adopted in recognition of the patterns of spatial interaction within the East Kimberley region that draw together populations from as far south as Halls Creek and the Tjurabalan region, as far north as Kalumburu, and as far east as Timber Creek. Essentially, these operate and potentially compete within the same regional economy and labour market.

It should be noted, however, that some attempt is made to 'locate' the Miriuwung and Gajerrong population within this broad regional context by estimating the size and demographic composition of the population using extant data from genealogical surveys. While this does not yield information on social and economic characteristics per se, it does provide a mechanism by which those characteristics reported for the region as a whole can be scaled down to approximate the situation for Miriuwung and Gajerrong.

Table 2. Non-Indigenous usual residence counts: East Kimberley region, 2001 and 2006

LGA	2001	2006	Net change	% change
Wyndham-East Kimberley SLA	3,700	3,387	-313	-8.4
Halls Creek SLA	524	458	-66	-12.6
Ngarliwurru-Wuli Indigenous Area	223	178	-45	-20.2
Total East Kimberley	4,447	4,023	-424	-9.5

Source: ABS 2001 and 2006 Census usual residence counts customised tables.

POPULATION CHANGE IN THE EAST KIMBERLEY REGION 2001–06

At the 2006 Census, a total of 10,504 persons were counted as usual residents of the East Kimberley region (equivalent to the Ord SSD). Of these, 5,276 indicated an Indigenous identity on their census form, while 4,026 indicated that they were non-Indigenous. In addition, as many as 1,202 residents of the East Kimberley did not indicate an Indigenous status on a census form, either because they did not answer the relevant question on an otherwise completed form, or because a form was not collected from a dwelling known to be occupied. In these latter instances the number of occupants in relevant dwellings was imputed from other census records for the area and added to the count, but Indigenous status remained unrecorded.

According to these usual resident counts, the census-identified Indigenous population of the East Kimberley declined over the five years between 2001 and 2006, and especially so in the Halls Creek Shire (Table 1). By contrast, the Indigenous population in the Ngarliwurru-Wuli Indigenous Area increased substantially in proportional terms, although the absolute size of the population on the Northern Territory side of the region remains relatively small at one-tenth of the regional total. Taken at face value, this overall decline is significant as it represents the first time that the usual residence count of Indigenous population in the East Kimberley has fallen since the period of modern census-taking began in 1971.

It is noteworthy that the non-Indigenous usual resident count also fell but by a larger proportional amount, and in all sub-areas (Table 2). For this population, the greatest numeric decline was in Wyndham-East Kimberley Shire and the greatest proportional decline was in the Northern Territory part of the region. The consequence of these changes in census count for the Indigenous share of the regional population is shown in Table 3. Overall, Indigenous people accounted for 56 per cent of the population counted in the region with the highest proportion in the Halls Creek Shire. This overall level remained basically unaltered but in Wyndham-East Kimberley Shire, and especially in the Ngarliwurru-Wuli Indigenous Area, the Indigenous share of population increased. This is significant given that these areas are closest to the site of the proposed Ord 2 development.

Table 3. Indigenous percentage share of regional population counts: East Kimberley region, 2001 and 2006

LGA	2001	2006	Net change	% change
Wyndham-East Kimberley SLA	38.5	40.0	1.5	3.9
Halls Creek SLA	84.7	84.4	-0.3	-0.3
Ngarliwurrurru-Wuli Indigenous Area	66.2	75.1	8.9	13.4
Total East Kimberley	56.0	56.7	0.7	1.2

Source: ABS 2001 and 2006 Census usual residence counts customised tables.

POPULATION ESTIMATES

These census counts of Indigenous population in the East Kimberley present a major challenge for interpretation because for the first time in the period of modern census-taking they point to a decline in the population compared to the previous count. Of course, they do not constitute the final output from the census since the ABS acknowledges that it never succeeds in counting all people and dwellings. Accordingly, a national follow-up survey of around one per cent of all households (the Post-Enumeration Survey, or PES) is conducted a month after each census to estimate numbers missed. To derive Indigenous and non-Indigenous estimates, those estimated as missed in this way are added to a pro rata allocation of those not reporting an Indigenous status in order to produce final population estimates. These become the official population figures for local government areas (LGAs) and they are used for important public policy purposes such as electoral redistributions, fiscal allocations of Goods and Services Tax (GST) revenue, calculation of service needs, and so on.

What is important to note is that up until the last census this PES had never been conducted in remote Indigenous communities such as in the Kimberley. As a consequence, the rate at which people in such places were missed by the census had simply been assumed to be the same as in all non-metropolitan areas combined (in 2001) or as in the whole of Australia (in 1996) after adjusting for estimates of non-response to the Indigenous question. In 2006, however, the ABS invested extra resources and extended the PES to remote communities thus enabling estimates of Indigenous undercount to be based on a continent-wide sample for the first time. This produced high undercount rates in jurisdictions that have large proportions of Indigenous population, such as Western Australia where the preliminary net undercount rate was estimated at 24 per cent (ABS 2007a: 78). Subsequent revision of this preliminary estimate based on a revised methodology that sought to reduce the national range of standard errors of undercount lowered this to 16 per cent (ABS 2008).

Table 4. Experimental Indigenous Estimated Resident Populations (ERPs): East Kimberley SLAs, 2001 and 2006

	2001	2006	Net change	% change
Wyndham-East Kimberley SLA	2,688	2,780	+92	+3.4
Halls Creek SLA	3,292	2,886	-406	-12.3
Total East Kimberley	5,980	5,666	-314	-5.2

Note: The figures shown for the East Kimberley are the sum of the two Shire estimates. The ABS estimate for the Kununurra Indigenous Region (which is slightly smaller in area as it excludes the area to the far west of Halls Creek) amounted to just 5,207 in 2006.

Source: ABS 2008.

Table 5. Kimberley SLAs: ABS estimated resident populations (ERPs) and Western Australian Planning Commission projections of total population to 2006

	ABS 2006 ERP (1)	2006 WAPC ^a Projection (2)	Ratio difference (1/2)	% change
Wyndham-East Kimberley SLA	7,159	8,600	0.83	+3.4
Halls Creek SLA	3,458	4,700	0.73	-12.3
Total East Kimberley	10,617	13,300	0.80	-5.2

Notes: a. Western Australian Planning Commission.

Indigenous projections to 2006 not available from the Western Australian Planning Commission.

Source: ABS 2008 and Western Australian Planning Commission 2005.

As for net undercount in the East Kimberley, this does not exist as a separate rate. Rather, in developing post-censal population estimates at the SLA-level, net undercount rates for broad regional geographies (capital city/balance of State) are applied pro rata to local area age/sex/and Indigenous composition following a statistical procedure that seeks to reduce standard errors of estimation at the State level. This procedure applies a mix of regional PES estimates of the undercount rate along with the national rate, and in areas such as Western Australia where standard errors are high, more weight is given to national, rather than local, PES results (ABS 2008). Based on this procedure, final Indigenous population estimates are available for the East Kimberley Shires (Table 4), although these appear as totals only with no age breakdown. For estimates by age, the Kununurra Indigenous Region is the minimum geography available.

The picture of regional population change produced by these estimates is not dissimilar to that reported from the census counts. Overall, they suggest a decline in the Indigenous population of the East Kimberley resulting from a substantial fall in the population of Halls Creek Shire and only a slight increase in Wyndham-

East Kimberley. If this were an accurate representation of population trends, then it would be very significant as it would constitute the first such decline in Indigenous population estimates for this region.

It would also contribute to a very different set of outcomes for total population growth in the East Kimberley as envisaged by current population projections produced by the Western Australian Planning Commission using 2001 estimates as the base (Table 5). Basically, current ABS estimates for the total population of the East Kimberley are 20 per cent lower than current Western Australian government projected levels, with an even larger gap in the estimates for Halls Creek Shire. Of course, these derive from very different methodologies, but the lack of correspondence does increase uncertainty about 'real' population levels. Obviously, any estimates produced simply reflect the method used. Therefore, to best determine the current size of the East Kimberley population, one should really ask, which method for calculating this is most fit for purpose?

FIT FOR PURPOSE?

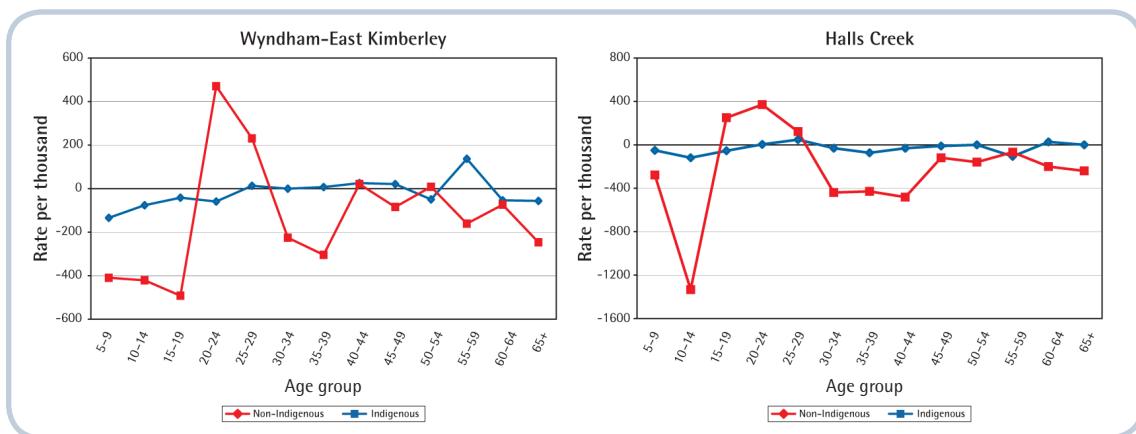
The idea of generating population statistics that are 'fit for purpose' is considered a core role of the ABS (The Australian Statistician, National Press Club Address, March 9, 2005). Clearly, then, in releasing Indigenous estimates at the SLA-level derived from existing methodology there is an implicit understanding on the part of the ABS that they are 'fit for purpose', but are they?

The answer to this question is contingent—if the aim is to compare East Kimberley shire populations with those in other local government areas in Australia then the ABS method of SLA-level population estimation is not only appropriate, it is essential in the sense that such comparison requires the application of a consistent methodology where the parts sum to the whole. If, however, the aim is to determine local levels of need, for example in service delivery or workforce planning, then the ABS method of SLA-level estimation is far less appropriate.

For one thing, the method of calculating SLA-level Indigenous estimates using a top-down pro rata distribution of undercount parameters that are derived for much higher level geographies does not necessarily provide good estimates at every reduction in scale. Ideally, population modelling should be conducted at the level it is intended to be used (in this instance, the East Kimberley Shires). Also, ideally, this should involve the application of local data and intelligence on components of population change. The top-down nature of the ABS estimation methodology which generates small area estimates from large area parameters is effectively the opposite of this ideal approach.

A second, and related point, is that the ABS does not provide standard errors for their small area level population estimates and so we have no measure of their reliability. However, as a proxy guide, and in the absence of any alternative, one piece of information that we might apply is the relative standard error derived at the State-level. For this purpose we use the standard error of 7.3 per cent associated with ABS preliminary State-level population estimates on the basis that this best reflects PES estimates specifically for Western Australia (ABS 2007a: 78). If this were to apply to the Indigenous estimate for Wyndham-

Fig. 1. Indigenous and non-Indigenous net migration rates by age 2001–06, Wyndham–East Kimberley and Halls Creek SLAs



Source: ABS 2006 Census of Population and Housing usual residence counts customised tables.

East Kimberley Shire then we would be estimating an Indigenous population in 2006 that lies somewhere between 2,577 and 2,983. Likewise, in Halls Creek Shire, the population would have been somewhere between 2,675 and 3,097. Both of these sets of figures are derived at the 95 per cent confidence limit. Given the wide range of probable values that this produces in each case, the 'actual' population level in 2006 is clearly uncertain, nor is it clear whether we are looking at an increase or a decrease over the previous 2001 estimates, which would have their own spread of values. In short, because of the nature of the methodology applied, small area Indigenous population estimates based on top-down methodology appear ill-suited for local needs assessment. Even applying State-level standard errors, they emerge as crude ball-park figures that are difficult to interpret over time.

ACCOUNTING FOR CHANGE IN ESTIMATES: LOCAL DATA

Against these uncertainties, it is possible to assemble local demographic data to generate an alternate assessment of Indigenous population change over the recent inter-censal period. Theoretically, there are several factors that could have contributed to the apparent decline in population estimates observed from the ABS methodology: a dramatic decline in fertility, a substantial rise in mortality, substantial net out-migration, an estimate in 2001 that was too high, or a substantial net census undercount in 2006 that was inadequately compensated for by the methodology used to calculate SLA-level estimates.

We can discount the first of these options. Between 2001 and 2006 a total of 825 Indigenous births were reported in the East Kimberley which is similar in level to that reported for the previous inter-censal period. We can also discount the second possibility since a total of 251 Indigenous deaths were recorded in the two

East Kimberley Shires and this was also consistent with previous levels. Of course, short of a natural disaster, this was to be expected. As for the third option, according to the 2006 Census there was a net migration loss of Indigenous population from the two Shires over the five-year period 2001–06 but this amounted to just 144. The distribution of this net migration loss across age groups is shown in Fig. 1 for the two SLAs. In both cases, Indigenous net rates are relatively flat, varying only slightly around zero though with a tendency for net loss at younger ages. Non-Indigenous rates, however, show a marked variation by age with substantial net migration loss among children, teenagers and in middle ages, and high net gains among those in their twenties.

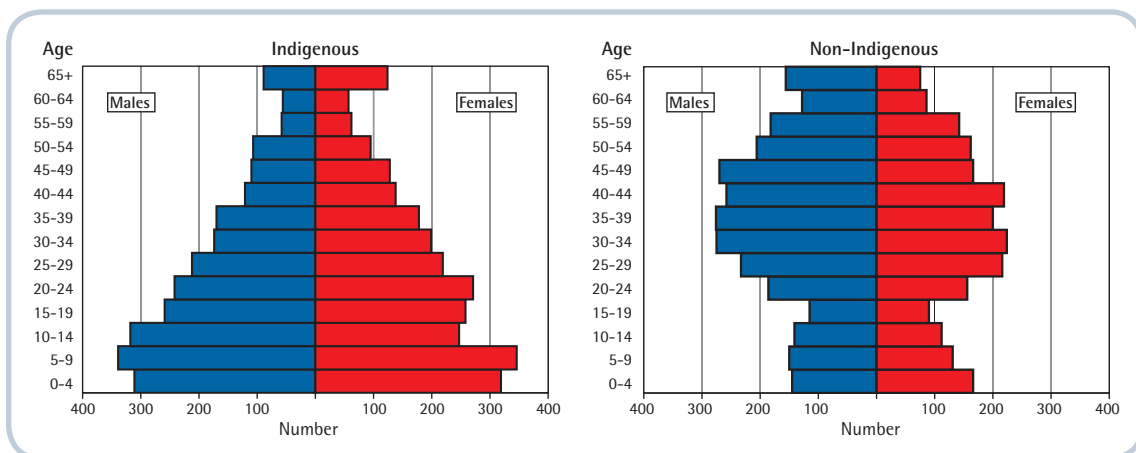
A key feature in both Shires is the focus on losses of school age populations but with no corresponding net loss in parental age groups, except very marginally in Halls Creek. This pattern suggests that a large part of the overall net loss due to migration may be related to movement out for schooling (including at primary ages), which in turn would reflect the classification of usual residence in favour of areas where students are boarding (on the census form, students boarding away from home are required to indicate their place of enumeration as their place of usual residence). Overall, the indication from these migration data is that the reduction in official post-censal estimates of the total East Kimberley population is more likely to reflect a real decline in the non-Indigenous resident population as a modest increase in Indigenous estimated numbers would have been expected.

While migration and deaths together accounted for a reduction in the population of 395, the total of 825 Indigenous births means that an overall increase in the population of around 430 might reasonably have been expected. Compared to the reduction in the ABS estimate for the region of 314 this creates a gap of almost 750 persons between the population level based on local data and the population level produced by the ABS estimation methodology.

However, it is possible that the 2001 ABS estimate was too high, although this seems unlikely since it was consistent with the extant trend in census counts—it would also have required that the net undercount adjustment applied in 2001 was relatively excessive in relation to 2006, which was not the case since it was based on PES results that excluded remote communities. Thus, the only remaining factor that might reasonably account for the observed decline in Indigenous population estimates appears to be an inadequate compensation of the local census undercount in 2006 due to the methodology applied.

This raises a degree of uncertainty regarding the fitness for purpose of ABS SLA-level estimates in providing an adequate basis for local area service needs planning in regions such as the East Kimberley. Accordingly, population levels for 2006 based on previous projections from 2001 (Taylor 2004) are applied in the current analysis where applicable. This is an attempt to benchmark the analysis on as realistic a demographic base as possible. A further modification is to treat census counts as a large sample survey and, where applicable, to apply rates derived from it (with caution) to projected population estimates to establish 'true' levels for select population characteristics.

Fig. 2. Distribution of the Indigenous and non-Indigenous Estimated Resident Populations (ERPs) of the Kununurra Indigenous Region by age and sex, 2006



Note: The Kununurra Indigenous Region is smaller than the Ord SSD. It also excludes the Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area.

Source: ABS 2008.

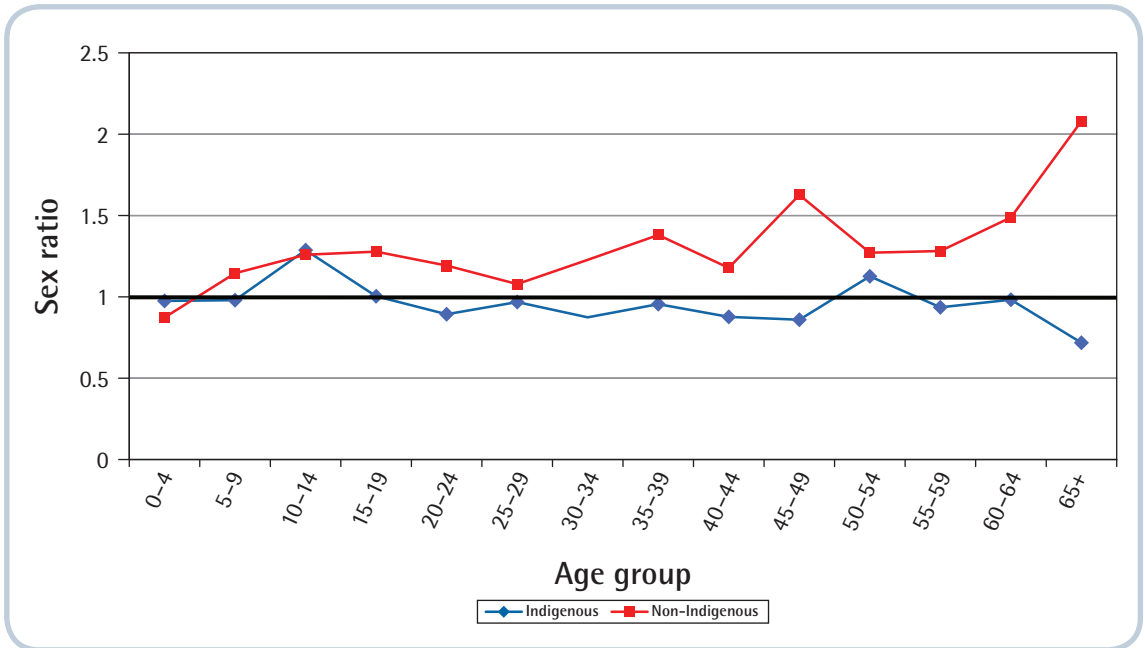
AGE AND SEX COMPOSITION

A key feature of regional demography that has implications for current economic status and future social and economic need is the contrast between the age distribution of the Indigenous and non-Indigenous populations. Fig. 2 illustrates this contrast for the East Kimberley region. Since non-Indigenous projected estimates to 2006 are not available, in this instance we use actual ABS 2006 estimates.

The Indigenous age distribution has a broad base that rapidly tapers with advancing age. This reflects a combination of relatively high fertility (although the reduction in numbers aged 0–4 is suggestive of recent fertility decline) and high adult mortality. Uniformity in the decline of population with age also reflects the net inter-regional migration balance at most ages shown in Fig. 1. Finally, it is significant that relatively large numbers of women remain in the childbearing ages, with even larger cohorts beneath them, as this indicates substantial population momentum with associated high potential for future growth in numbers. The consequence is a population with more than one-third of the population (36%) under the age of 15 years.

By contrast, the non-Indigenous age distribution is a classic example of a population subject to selective inter-regional migration producing net gains among those of working age and net losses among children and teens, and at retirement ages. There is also evidence of bias in favour of males throughout the working age groups. Underlying this pattern are high rates of inter-regional population turnover as reported for the non-Indigenous population across remote Australia (Brown, Taylor & Bell 2008). For example, such was

Fig. 3. Indigenous and non-Indigenous sex ratios by age: East Kimberley region, 2006



Source: ABS 2008.

the movement of non-Indigenous population in and out of the Ord SSD between 2001 and 2006 that the census-derived gross migration rate was as high as 897 per thousand. This very high level of population turnover reflects the continuing role of this region within the Western Australian economy as a place of selective migration tied to short-term employment opportunity. The upshot is a non-Indigenous population that is predominantly made up of adults (83%).

One of the most striking demographic impacts of differential migration in and out of the East Kimberley is the very different sex ratio for the resident Indigenous and non-Indigenous populations. This is shown in Fig. 3. The Indigenous sex ratio based on the census count is fairly close to parity except in the mid-teens, 25–35, and 40s age groups. Non-Indigenous sex ratios, on the other hand, are quite different with males substantially prominent in almost all age groups.

As a consequence, the Indigenous share of the regional population varies substantially according to age group and sex, as Table 6 reveals. Overall, Indigenous males and females account for 54 per cent and 59 per cent respectively of their regional populations, but when this is broken down by age group we can see that this varies markedly. Indigenous people account for well over half of the population under 20

Table 6. Indigenous percentage of five year age groups by sex: East Kimberley region, 2006

Age group	Males	Females
0-4	68.2	65.8
5-9	69.3	72.5
10-14	69.3	68.8
15-19	69.3	74.1
20-24	56.5	63.5
25-29	47.6	50.3
30-34	38.8	47.0
35-39	38.1	47.1
40-44	31.9	38.7
45-49	28.9	43.5
50-54	34.2	37.0
55-59	24.2	30.4
60-64	30.4	39.9
65+	36.3	62.3
Total	48.5	55.2

Source: ABS 2008.

(above 70%), around two-thirds to one-half of the population aged 20-29, less than one-half and even less than one-third of those in prime working age (especially males), and a rise again to over two-thirds of the aged population, at least among females since Indigenous males suffer the effects of higher mortality in older age groups.

MIRIUWUNG-GAJERRONG DEMOGRAPHY

As noted, the Ord Final Agreement places special emphasis on addressing the needs of Miriuwung and Gajerrong peoples both past, present and future. Fundamental to any assessment of these is a sense of the size and demographic composition of the relevant population. However, official statistical information is rarely, if at all, available for populations defined according to cultural criteria. Whilst it is true that the ABS has developed the Australian Indigenous Geographic Classification (AIGC) in recognition of the quite different spatial distribution of the Indigenous population, this does not resolve the problem because the primary organizing principles of Indigenous social formation are both spatial and socio-relational and these invariably do not coincide to produce discretely bounded social groupings that mesh with units of the AIGC. In effect, the Indigenous cultural map is vastly different to that imposed by the AIGC (Arthur & Morphy

2005: 81). Consequently, formal statistical geographies are unlikely to provide for a demography of Indigenous polities that have rights and interests in particular places—an issue of boundary definition and mismatch that has been well-rehearsed in Australia in relation to land rights (Morphy 1999; Sutton 1995, 2003).

In many ways this presents an important reflection on the distinction between officially-identified Indigenous populations, on the one hand, and Indigenous peoples on the other. The demography of Indigenous populations is best suited to the provision of citizen rights. What it does not provide for are Indigenous interests in inherent and proprietary rights, in particular over land. Approximately 18% of Australia is currently under some form of Indigenous land tenure and this is set to increase via native title determinations and land purchases. All across the continent there is therefore a growing discrepancy between the best-intentioned of statistical output frameworks and the actual needs of Indigenous land-holding groups for an ethnographically-informed demography suited to their needs for managing the Indigenous estate and associated constituencies.

While this cannot be established through conventional means using census data, the collection of detailed genealogical information for the purposes of native title claims and negotiations over the Ord 2 and Argyle developments for those defined as Miriuwung and Gajerrong does provide a potential alternative approach, even if only to provide an approximate indication of group size and composition. This genealogical data is based on research conducted by the anthropologist Kim Barber over the period 1986–2004 and was current as of December 2004. However, some adjustment to the genealogical data is required in order to provide summary figures.

According to the parameters applied by Barber, the demographic information provided refer to 18 estate groups (Dawang) in the Ord river catchment area of the East Kimberley region, including those incorporated in the structure of the MG Corporation. Again, according to the rules applied, recruitment to each of these groups is by cognatic descent, and one consequence is that a number of families and individuals appear in the genealogies for more than one of the estate groups (having rights and interests in a number of groups including those of both mother and father). Barber estimates that this effect inflates the total number of individuals in the database by approximately 35 per cent. While this is not an issue for assessing the size of estate groups, when it comes to establishing a global Miriuwung-Gajerrong demography it is necessary to deflate the population by this amount.

Also, since the data were collected for the purpose of native title claims and negotiations over the Ord 2 and Argyle developments, the genealogies focus on the upper generations and in general do not include younger children, although some were included where the information was readily available. As a consequence, Barber considers that children in the 0–4 age group, in particular, are substantially underrepresented. In order to compensate for this, the numbers in this age group are inflated here to match the proportion of the official 2001 Indigenous estimated resident population in the same age group (around 13%). Using these two adjustments, the overall population of Miriuwung and Gajerrong in 2004 is estimated to have been 1,107. Assuming that these are all usual residents of the region (Barber advises that this is predominantly

the case) then this amounts to 21 per cent of the 2006 Census usual residence count for the East Kimberley region (Table 1).

In order to establish the age of individuals, Barber used key informants during the collection of genealogical data or subsequently constructed ages on the basis of birth orders in the genealogies. In these latter cases, the device was to assume 25 years between generations. Birth dates of significant individuals were also utilised to assist in estimating the relative ages of related individuals. In some instances, it was assumed that there is an age difference of 2 years between siblings from the same mother.

The outcome from Barber's data collection and imputation is an age/sex distribution (Fig. 4) which looks very similar to that revealed for the Indigenous population of the East Kimberley region as a whole as shown in Fig. 2, and presumably, for all the same demographic reasons. At the same time, it appears that the combined Miriuwung and Gajerrong population may be somewhat younger in its age profile than the Indigenous population in the region generally, with an estimated 42 per cent under 15 years of age (approximately 460 children) compared to 36 per cent in the wider region. Consequently, the estimated size of the Miriuwung and Gajerrong adult population (over 15 years) was around 650 (roughly 19% of the regional total).

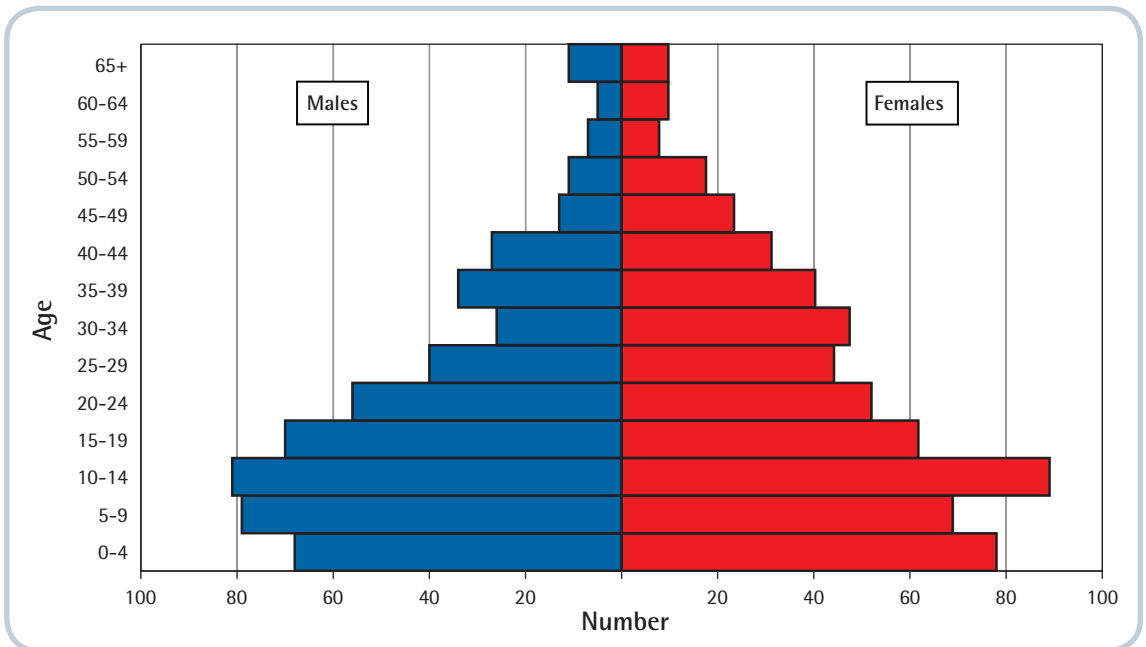
Of course, these numbers remain estimates only, and are based on field research conducted several years ago. Moreover, the recent population trend in the region has been one of steady growth. Because of this there is little use in planning for current numbers—far better to gain an estimate of likely future numbers and plan for these. All too often in Indigenous affairs decisions are made on the basis of 'old' data and by the time policy ideas are finally actioned on the ground the situation has invariably moved on thereby creating a constant sense of catch up (Ah Kit 2004). Thus, in the present case we can use existing Indigenous population projections for the Ord SSD (Taylor 2004) to derive an estimate of likely future numbers of Miriuwung and Gajerrong children and working-age people by 2021. This suggests, fairly crudely, that by 2021 the estimate of 460 children will rise to almost 700 while the working-age population of around 650 will be around 920 with a total Miriuwung and Gajerrong population of just over 1,600.

As for Dawang groups that have rights and interests in the Ord 2 development, according to Barber's data these vary considerably in population size, although this assessment is made using figures that are not adjusted for any underestimation of children and so are approximate minimum numbers only. What they clearly indicate, though, is wide variation around an average Dawang size of roughly 100 persons.

INDIGENOUS PARTICIPATION IN THE REGIONAL LABOUR MARKET

Long term trend data for the East Kimberley region as defined here are difficult to establish owing to changes over time in statistical boundaries in the Northern Territory. However, we do know that 39 per cent of Indigenous adults in the Ord SSD were employed in 1981, whilst in the slightly wider region of interest the equivalent figure in 2006 was 54 per cent. There is no doubt, then, that both the level and rate of Indigenous employment have risen substantially over the past 25 years. However, there is also no doubt that net gains in

Fig. 4. Estimated distribution of the Miriwung and Gajerrong population by age and sex, 2004



Source: Kim Barber, pers. comm.

employment over this period have been due entirely to the expansion of Community Development Employment Projects (CDEP) program activities. This is underlined by the fact that the Indigenous employment rate excluding CDEP (described here as the mainstream employment rate) actually fell from 39 per cent in 1981 to only 20 per cent in 2006. To be fair, some of this decline reflects a substitution effect due to the gradual introduction of CDEP, with many jobs that might otherwise have been classified as part of the mainstream labour market (especially in the provision of education, health and municipal-type services) being absorbed (or enabled) by the program. In effect, though, the decline in the Indigenous mainstream employment rate only serves to emphasise the rise to dominance of CDEP in the regional Indigenous labour market.

In 1981, there were no CDEP programs in the East Kimberley region, and the 750 Indigenous people recorded in employment at that time by the census (excluding any in the Northern Territory) were therefore (by definition) to be found in the mainstream labour market. By the time of the 2006 Census there were six CDEP programs in the region and the census of that year counted 995 Indigenous usual residents who were CDEP employees. Compared to this, the 2006 census counted only 554 Indigenous usual residents in the

mainstream (non-CDEP) workforce. This census figure for CDEP employment broadly agrees with the figure of 1,179 CDEP participants in the region derived from administrative data in 2007.

These employment figures present a marked contrast to the experience of non-Indigenous residents of the East Kimberley. Over the same period, the level of mainstream employment among non-Indigenous residents of the region has increased substantially and in 2006 the mainstream employment rate for non-Indigenous usual residents stood at 84 per cent underlining the fact that most non-Indigenous adults are attracted to the region for employment, as is the case across most of remote Australia (Brown, Taylor and Bell 2008).

Thus, while the regional labour market has grown in both size and complexity, Indigenous mainstream participation has receded both absolutely and relatively. In effect, the past 25 years have witnessed a singular shift from an historical Indigenous association with private sector employment, largely in the form of pastoral work, to a contemporary reliance on the government sector, largely in the form of CDEP. Almost two-thirds (64%) of Indigenous employment in the East Kimberley is now in CDEP programs. Aside from CDEP, the largest single category of adults in terms of labour force status are those not in the labour force (45% of Indigenous adults compared to just 13% of non-Indigenous adults).

This structural gap between the labour force status of Indigenous and non-Indigenous adults has significant consequences for relative economic status, as well as for consideration of future options regarding Indigenous participation in the regional economy. There are three reasons for this. First of all, the major regional impacts on Indigenous people in terms of their overall labour force and economic status are likely to depend more on administrative and funding decisions regarding CDEP than anything else. While current policy settings emphasise movement off the scheme into mainstream work, the manner in which this is managed and synchronised will be crucial to the overall regional status of the Indigenous labour force given the scale of current reliance on CDEP.

Second, CDEP inevitably forms part of any comprehensive planning for Indigenous participation in regional economic development. This is because much of the locally based potential mainstream workforce would, in all likelihood, be currently engaged by a CDEP program and building necessary skills and experience via such employment. Also, many of the regional multipliers in the form of enterprise development are likely to accrue in the first instance to CDEP programs given their prominent role in pursuing such opportunities.

Finally, the nature of CDEP program economic activity is such that it underpins key elements of community service delivery (with a sizeable substitution effect) and to some degree more customary economic activities as well (such as art production). In this context, the degree to which such activities continue to be supported by CDEP as it transforms into a program focused on moving individuals into mainstream work will be crucial.

REGIONAL LABOUR FORCE STATUS

Rates of labour force status from the 2006 Census are shown for Indigenous and non-Indigenous residents of the region in Table 7. Three customised indicators of labour force status are established:

- the *employment rate*, representing the percentage of persons aged 15 years and over who indicated in the census that they were in employment (either in CDEP or in mainstream work) during the week prior to enumeration
- the *unemployment rate*, expressing 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
- the *non-participation rate*, representing persons not in the labour force (employed and unemployed) as a percentage of those of working age.

What this shows is that the rate of Indigenous CDEP employment is almost twice that of Indigenous mainstream employment while the latter is massively below the mainstream employment rate for non-Indigenous residents. Interestingly, census-derived unemployment rates were low for both populations, although this no doubt reflects the impact of CDEP participation among Indigenous adults. At the same time, the proportion of Indigenous adults not in the labour force was substantial at 45 per cent compared to just 13 per cent for non-Indigenous adults.

It should be noted that the levels reported here from the 2006 Census are minimum numbers only due to the fact that 882 individuals did not indicate their labour force status. Also, they are based on census counts and not final census-based estimates of population.

With these caveats in mind, the current (2006) size of the Indigenous labour force in the East Kimberley (all Indigenous residents employed in CDEP and mainstream work plus those unemployed) amounts to 1,675 (Table 8), while the non-Indigenous labour force totals 2,847. However, if the census-based rates in Table 7 were applied to the projected working-age population for the Ord SSD plus the adult census count for the Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area then the estimate of the regional Indigenous labour force would be 2,534. Either way, Indigenous adults comprise only 37 per cent of the regional labour force despite accounting for 50 per cent of the resident adult population. Accordingly, the number of Indigenous adults not in the labour force (1,362, or 2,060 based on projected numbers) is relatively substantial.

This low Indigenous labour force participation is supported by administrative data on the number of Centrelink customer payments to Indigenous adults in the second quarter of 2007 as shown in Table 9. Before considering these data, a number of caveats should be noted. First, Indigenous status is not a compulsory field for Centrelink customers and these data exclude those who did not self-identify. Second, all cells with a

Table 7. Labour force status rates for Indigenous and non-Indigenous usual residents of the East Kimberley region, 2006

	Employed		Unemployed	Not in the labour force	Total 15+ ^a
	CDEP	Mainstream			
Indigenous	32.8	18.2	4.1	44.8	100.0
Non-Indigenous	0.9	84.3	1.4	13.4	100.0
Total	16.2	52.6	2.7	28.5	100.0

Note: a. Excludes Labour Force Status Not Stated.

Source: ABS 2006 Census customised usual residence tables.

Table 8. Labour force status levels for Indigenous and non-Indigenous usual residents of the East Kimberley region, 2006

	Employed		Unemployed	Not in the labour force	Total 15+ ^a
	CDEP	Mainstream			
Indigenous	995	554	126	1,362	3,037
Non-Indigenous	29	2,771	47	440	3,287
Total	1,024	3,325	173	1,802	6,324

Note: a. Excludes Labour Force Status Not Stated.

Source: ABS 2006 Census customised usual residence tables.

value of less than 20 are suppressed. Finally, customers can receive more than one payment and so aggregate totals shown are of payments, not of discrete customers.

Of note is the fact that the census-derived number of unemployed Indigenous persons (126 in Table 8) is less than half the number of recipients of Newstart Allowance resident in Western Australian postcodes within the region in the second quarter of 2007. This amounted to 292 and would be higher still if data for the smaller Northern Territory component of the region were added. Despite this mismatch, given the administratively determined nature of much Indigenous economic activity in the region, the boundaries between officially recorded employment, unemployment, and consequent labour force participation rates, are sufficiently blurred that all of these data should be approached with some caution. They are best seen as rough estimates rather than as robust indicators.

Table 9. Indigenous Centrelink customers by payment type: East Kimberley^a, 2007^b

Payment type ^c	Wyndham-East Kimberley	Halls Creek	Total ^d
Newstart	155	137	292
Sickness allowance	<20	<20	<20
Mature age allowance	<20	<20	<20
Youth allowance	115	66	181
Age pension	110	84	194
Carer pension	30	39	69
Disability support	229	170	399
Abstudy	302	195	497
Parenting Payment Partnered	99	80	179

Notes: a. Postcodes WA6740, WA6743, WA6770. Excludes Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area.

b. Various dates in the second quarter of 2007.

c. Excludes Family Tax Benefit.

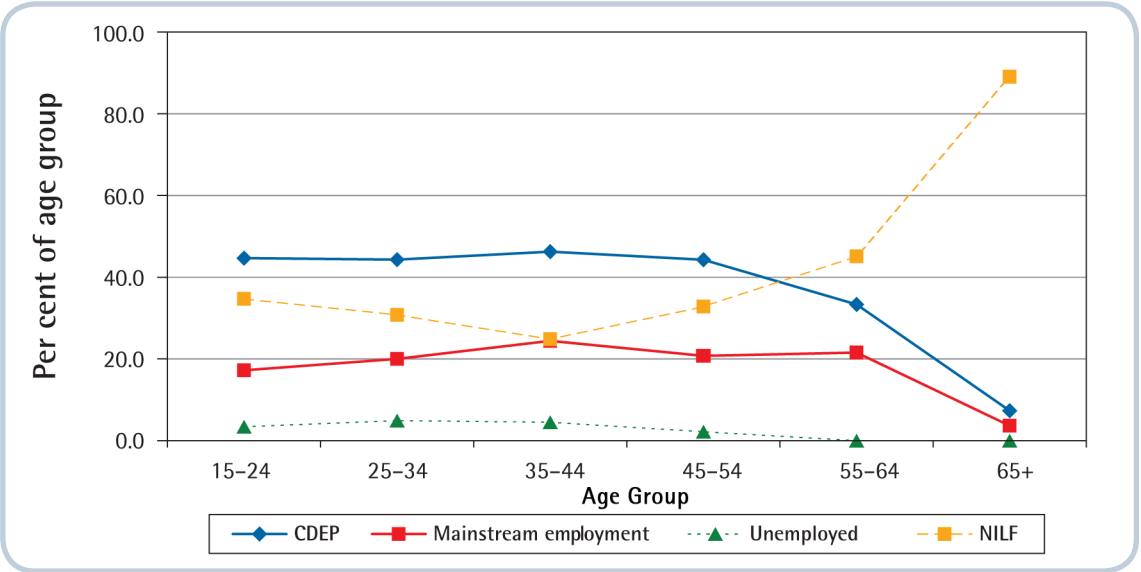
d. Excludes Indigenous status not stated.

Source: Centrelink National Support Office.

AGE DISTRIBUTION

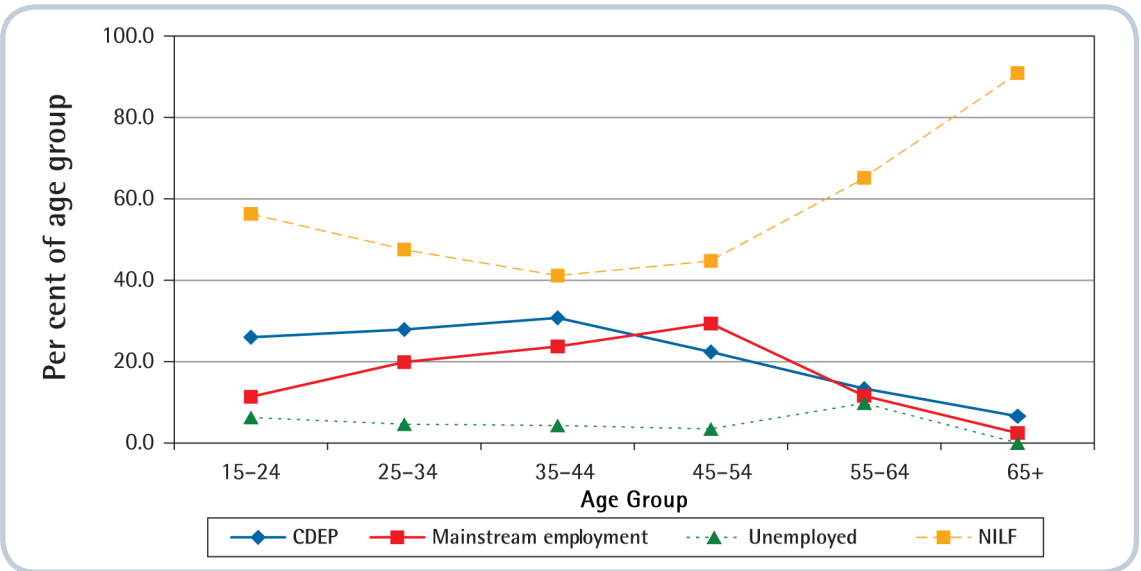
Of particular interest for social impact planning is the distribution of employment and related labour force status by age. This is shown in Fig. 5 for Indigenous males and in Fig. 6 for Indigenous females resident in the East Kimberley region using 2006 Census data. The most striking feature is the fact that participation in CDEP is higher than participation in mainstream employment at all ages, and especially so among males. As expected, labour force participation is positively correlated with age up to 35–44 years, but recedes rapidly thereafter with rising proportions not in the labour force indicating an abrupt shortening of the working-life span. It is likely that this reflects increased morbidity with advancing age, a proposition that can be tested with appropriate hospital separations data (though this is not done here). Accordingly, those most active in the labour market are generally under 45 years of age. It is noticeable, however, how the rate of female non-participation in the labour force is consistently around 20 percentage points higher than the rate for males. To the extent that local recruitment for mainstream Indigenous employment will be drawn from those currently aged 15–34 years, these data point to a substantial lack of labour market experience, especially among females and for anyone at all outside of CDEP program participation.

Fig. 5. Labour force status rates of Indigenous males by age group: East Kimberley region, 2006



Source: ABS 2006 Census of Population and Housing, customised usual residence tables.

Fig. 6. Labour force status rates of Indigenous females by age group: East Kimberley region, 2006



Source: ABS 2006 Census of Population and Housing, customised usual residence tables.

Fig. 7. Distribution of Indigenous and non-Indigenous male employment by industry division: East Kimberley region, 2006

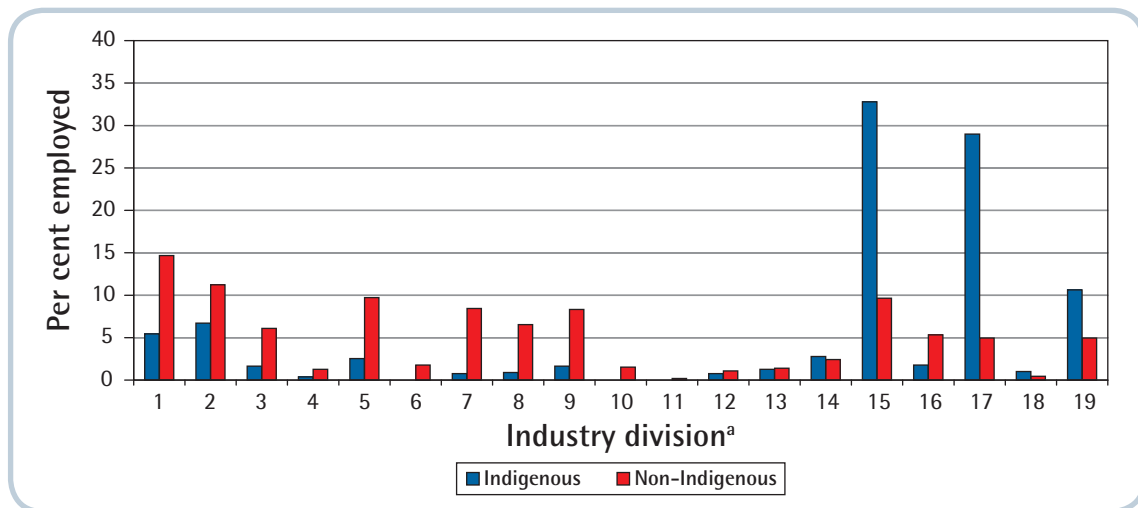
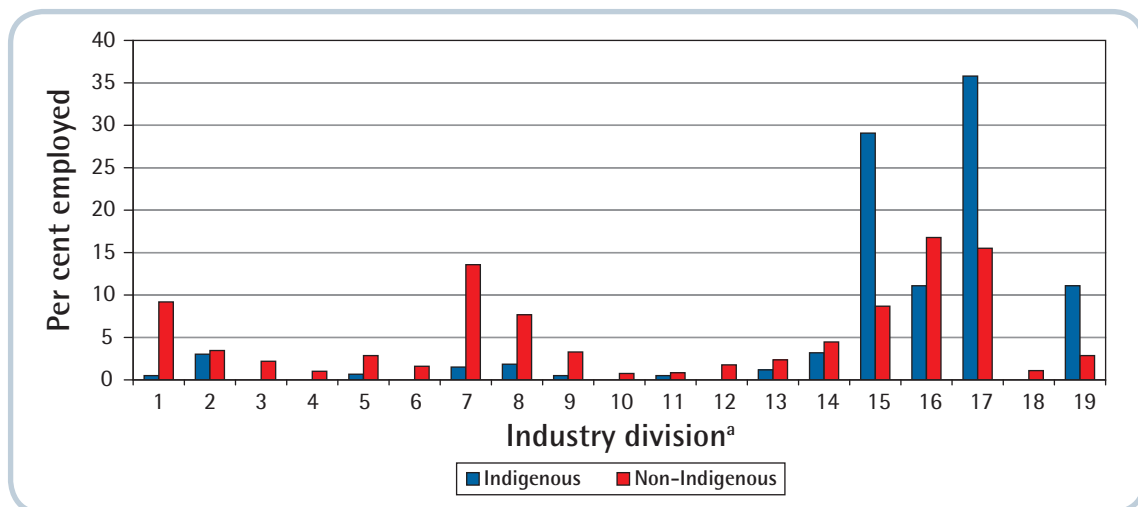


Fig. 8. Distribution of Indigenous and non-Indigenous female employment by industry division: East Kimberley region, 2006



Note: a. Industry division categories:

1. Agriculture, Forestry and Fishing; 2. Mining; 3. Manufacturing; 4. Electricity, Gas, Water and Waste Services; 5. Construction; 6. Wholesale Trade; 7. Retail Trade; 8. Accommodation and Food Services; 9. Transport, Postal and Warehousing; 10. Information, Media and Telecommunications; 11. Finance and Insurance Services; 12. Rental, Hiring and Real Estate Services; 13. Professional, Scientific and Technical Services; 14. Administrative and Support Services; 15. Public Administration and Safety; 16. Education and Training; 17. Health Care and Social Assistance; 18. Arts and Recreation Services; 19. Other Services

Source: ABS 2006 Census customised usual residence tables.

Table 10. Differentials in employment distribution between male and female Indigenous and non-Indigenous workers by industry division: East Kimberley region, 2006

Industry division	Difference in % employed		
	Males	Females	Total
Agriculture, Forestry and Fishing	-9.2	-8.7	-9.0
Mining	-4.5	-0.4	-2.8
Manufacturing	-4.4	-2.2	-3.5
Electricity, Gas, Water and Waste Services	-0.9	-1.0	-0.9
Construction	-7.2	-2.2	-5.0
Wholesale Trade	-1.8	-1.6	-1.7
Retail Trade	-7.7	-12.1	-9.6
Accommodation and Food Services	-5.7	-5.8	-5.7
Transport, Postal and Warehousing	-6.7	-2.8	-5.0
Information Media and Telecommunications	-1.5	-0.8	-1.2
Financial and Insurance Services	-0.2	-0.3	-0.3
Rental, Hiring and Real Estate Services	-0.3	-1.8	-0.9
Professional, Scientific and Technical Services	-0.1	-1.2	-0.6
Administrative and Support Services	0.4	-1.3	-0.3
Public Administration and Safety	23.1	20.4	22.0
Education and Training	-3.6	-5.7	-4.5
Health Care and Social Assistance	24.0	20.3	22.4
Arts and Recreation Services	0.6	-1.1	-0.1
Other Services	5.7	8.2	6.8
Index of dissimilarity	53.8	49.0	51.2

Source: ABS 2006 Census customised usual residence tables.

INDUSTRY AND OCCUPATION

In the final analysis, employment is 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 and this is shown for males and females in Figs 7 and 8.

Clearly, the distribution of Indigenous male and female employment by industry division is quite different from that of their respective non-Indigenous counterparts. Indigenous employment is heavily concentrated in public administration, health care and social assistance, which mostly reflects the census classification of CDEP employment. The only other focus of any significance for Indigenous employment is in agriculture,

Fig. 9. Distribution of Indigenous and non-Indigenous male employment by occupational group: East Kimberley region, 2006

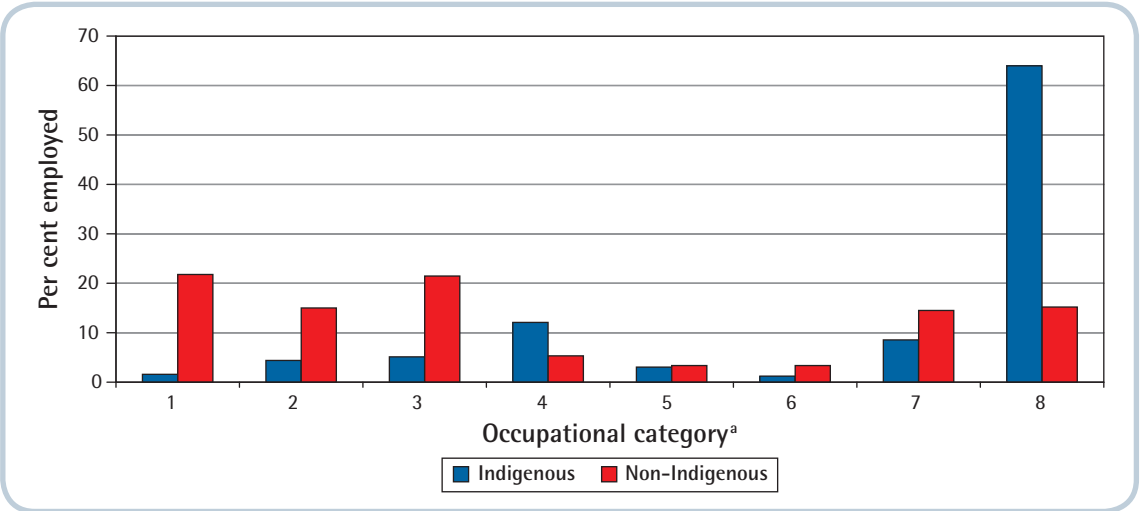
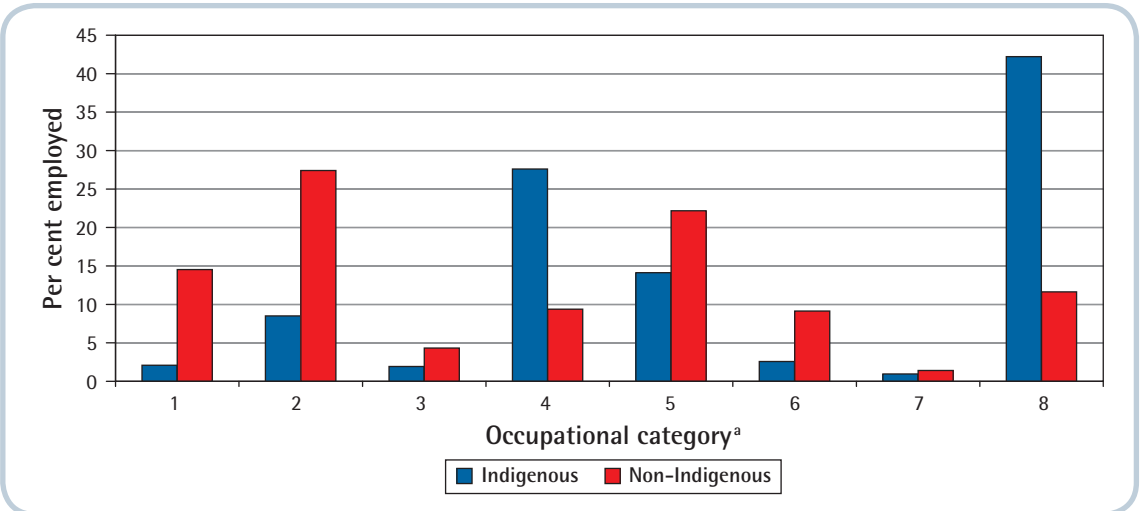


Fig. 10. Distribution of Indigenous and non-Indigenous female employment by occupational group: East Kimberley region, 2006



Note: a. Occupational categories:

1. Managers; 2. Professionals; 3. Technicians and Trades Workers; 4. Community and Personal Service Workers; 5. Clerical and Administrative Workers; 6. Sales Workers; 7. Machinery Operators and Drivers; 8. Labourers

Source: ABS 2006 Census customised usual residence tables.

Table 11. Differentials in employment distribution between male and female Indigenous and non-Indigenous workers by occupational group: East Kimberley region, 2006

Industry division	Difference in % employed		
	Males	Females	Total
Managers	-20.2	-12.4	-16.8
Professionals	-10.6	-18.9	-14.2
Technicians and Trades Workers	-16.3	-2.4	-10.3
Community and Personal Service Workers	6.8	18.2	11.7
Clerical and Administrative Workers	-0.3	-8.1	-3.7
Sales Workers	-2.1	-6.6	-4.1
Machinery Operators and Drivers	-6.0	-0.4	-3.6
Labourers	48.8	30.6	40.9
Index of dissimilarity	55.6	48.8	52.7

Source: ABS 2006 Census customised usual residence tables.

mining and 'other services' for males, and education and training and 'other services' for females. Overall, this concentration of Indigenous employment in few industry classes compared to the much wider spread of non-Indigenous employment (especially male employment) results in substantial labour market segregation in the East Kimberley. In effect, half of the Indigenous workforce would have to change their industry of employment in order to have a distribution of employment across industry types equivalent to that of the rest of the East Kimberley workforce. This is indicated by an index of dissimilarity between Indigenous and non-Indigenous employment of 53.8 for males and 49.0 for females as shown in Table 10 (the index has a scale of 0–100 with 100 representing maximum segregation).

The actual amount of difference between the percentage representation of Indigenous and non-Indigenous male and female workers in each industry division is also shown in Table 10 with negative signs indicating those industries where Indigenous workers are under-represented compared to non-Indigenous workers. Agriculture, construction, retail, accommodation and transport industries stand out for males and agriculture, retail accommodation and education and training for females. Conversely, substantial over-representation of both male and female Indigenous workers is evident in public administration and health care and social assistance industries.

A similar scale of difference in workforce participation is evident in respect of occupational distributions (Figs 9 and 10). The overwhelming pattern is one of under-representation of Indigenous workers in managerial, professional and technical and trade occupations, and their substantial over-representation in labouring jobs. This is especially so among males, as Indigenous females have relatively high representation in community and personal service and clerical and administrative jobs. While some of this distortion in the Indigenous

Table 12. Rank order of the top 20 industries of employment: Indigenous and non-Indigenous workers in the East Kimberley region, 2006

Indigenous	Non-Indigenous
<i>Local Government Administration</i> 393	<i>Other Non-Metallic Mineral Mining and Quarrying</i> 189
Other Social Assistance Services 228	<i>Beef Cattle Farming (Specialised)</i> 145
Other Interest Group Services, nec 140	<i>Accommodation</i> 123
<i>Social Assistance Services, nfd</i> 138	<i>Secondary Education</i> 92
<i>Other Non-Metallic Mineral Mining and Quarrying</i> 54	Hospitals 90
<i>Beef Cattle Farming (Specialised)</i> 29	<i>Local Government Administration</i> 84
<i>Primary Education</i> 29	<i>Primary Education</i> 80
General Practice Medical Services 23	<i>Supermarket and Grocery Stores</i> 77
Employment Placement and Recruitment Services 17	<i>State Government Administration</i> 76
Central Government Administration 15	Air and Space Transport 55
<i>Secondary Education</i> 15	Police Services 46
<i>State Government Administration</i> 14	Fuel Retailing 38
Employment Services, nfd 13	Other Agriculture and Fishing Support Services 37
<i>Supermarket and Grocery Stores</i> 9	Road Freight Transport 37
<i>Accommodation</i> 9	Technical and Vocational Education and Training 37
School Education, nfd 9	House Construction 34
Combined Primary and Secondary Education 9	Other Social Assistance Services 34
Child Care Services 9	Sugar Manufacturing 33
Non-Residential Building Construction 8	<i>Social Assistance Services, nfd</i> 32
Management Advice and Related Consulting Services 8	Other Automotive Repair and Maintenance 31
Total top 20 employment 1,169	Total top 20 employment 1,370
% of workforce 84.4	% of workforce 49.6

Notes: nfd = not further defined.

Shared categories in italics.

Source: ABS 2006 Census of Population and Housing customised usual residence tables.

occupational profile arises from the ABS tendency to code CDEP program workers as labourers, there is no doubt that the contrasting distributions with emphasis at either end of the occupational scale provides one measure of the skills differential between Indigenous and non-Indigenous workers in the region.

While the occupational distribution of Indigenous females is more even, it is nonetheless the case that Indigenous women experience double segregation in the regional labour market since (as women) they gravitate to the same sex-segregated occupations as their non-Indigenous counterparts, notably in clerical and administrative positions. At the same time, Indigenous women remain substantially under-represented in managerial and professional jobs (Table 11). The greater similarities in female employment are reflected in a lower index of dissimilarity between female workers compared to male (48.8 compared to 55.6). Viewed overall, though, Indigenous workers in the East Kimberley are substantially under-represented in all of the more skilled occupations (especially males in managerial occupations), and as a consequence as much as 53 per cent of the Indigenous workforce would need to shift their occupational group if they were to match the skill set of the regional non-Indigenous workforce.

The data in Figs 7–10 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 in a way that highlights the particular jobs in which Indigenous and non-Indigenous workers congregate. For example, the Australian and New Zealand Standard Industrial Classification that the ABS uses to categorise industries can be broken down into 506 individual industry classes, while the Australian and New Zealand Standard Classification of Occupations is reducible to 358 occupational unit groups. In identifying key components of the East Kimberley labour market, these are the categories utilised here.

When examined at this level of detail, the distribution of employment in the East Kimberley, for both Indigenous and non-Indigenous workers, emerges as even more concentrated into relatively few individual industries and occupations. Table 12 shows the top 20 industry classes (based on numbers employed) listed in rank order for both sets of workers in the region. These top 20 out of 506 industries account for almost all Indigenous employment (84%) but just under half (49%) of all non-Indigenous employment. Industries marked in italics indicate those that are shared between the Indigenous and non-Indigenous lists; all others are unique. Thus, nine out of the top 20 employing industries are common to both Indigenous and non-Indigenous workers and, not surprisingly, many of these (such as local government administration, mining, accommodation, beef cattle farming, and secondary education) are major regional employers.

However, there are notable differences indicating significant structural breaks in the labour market. For example, Indigenous people are relatively absent from certain key industry employers such as the health sector, transport, retailing, construction and the sugar industry. By contrast, they are heavily concentrated in municipal and community type service industries. At a stroke, then, the relative absence of Indigenous people from some of the region's top employing industries indicates that a significant contribution to the relatively poor labour force status of Indigenous people is their lack of parity participation across the full range of regional economic activities.

Table 13. Rank order of the top 20 occupations of employment: Indigenous and non-Indigenous workers in the East Kimberley region, 2006

Indigenous		Non-Indigenous	
Recycling and Rubbish Collectors	262	Primary School Teachers	88
Welfare Support Workers	92	Sales Assistants (General)	83
Handypersons	88	Crop Farmers	79
Labourers, nfd	76	Retail Managers	79
Education Aides	62	<i>Drillers, Miners and Shot Firers</i>	73
<i>Livestock Farm Workers</i>	50	<i>Livestock Farm Workers</i>	70
Cleaners and Laundry Workers, nfd	49	General Clerks	57
Domestic Cleaners	43	Registered Nurses	57
Garden and Nursery Labourers	37	Truck Drivers	53
<i>Commercial Cleaners</i>	34	Air Transport Professionals	51
Fencers	27	Metal Fitters and Machinists	46
Child Carers	26	Police	41
Other Cleaners	26	Livestock Farmers	41
Building and Plumbing Labourers	24	Bookkeepers	39
Indigenous Health Workers	24	Motor Mechanics	37
<i>Drillers, Miners and Shot Firers</i>	22	Office Managers	36
Receptionists	21	<i>Commercial Cleaners</i>	35
Other Miscellaneous Labourers	21	Environmental Scientists	35
Gardeners	20	Secondary School Teachers	35
General Clerks	19	Crop Farm Workers	34
Total top 20 employment	1,023	Total top 20 employment	1,069
% of workforce	70.9	% of workforce	38.4

Notes: nfd = not further defined.

Shared categories in italics.

Source: ABS 2006 Census of Population and Housing customised usual residence tables.

Not surprisingly, segmentation and concentration in the regional labour market is also evident in regard to occupations. Table 13 reveals that the top 20 out of 358 occupations account for more than two-thirds of all Indigenous workers in the region (71%) compared to just 38 per cent of non-Indigenous workers. Only three out of the top 20 occupational categories are shared indicating greater occupational than industry segregation. The skills gap is clearly emphasized by the fact that rubbish collectors represent the single largest occupation for Indigenous workers. Even where occupations are similar, non-Indigenous workers

Table 14. Local/FIFO composition of ADM Indigenous and non-Indigenous workforces, 2007

	ADM	Kimberley Group Training	Total
Local Indigenous	116	65	181
Local non-Indigenous	259	13	272
Total Local	375	78	453
FIFO Indigenous	7	0	7
FIFO non-Indigenous	315	0	315
Total FIFO	322	0	322
Total employees (site)	697	78	775
Indigenous employment (%)	17.6	83.3	24.3
Local Employment (%)	53.8	100.0	58.5

Source: ADM data made available by Kimberley Development Commission, Kununurra.

are registered nurses, whereas Indigenous workers are health workers; non-Indigenous workers are primary school teachers, whereas Indigenous workers are education aides, and so on.

MINING EMPLOYMENT

Presently, the key mainstream employment multiplier for Indigenous people in the region stems from the mineral resources sector and, in particular, from activities associated with Argyle Diamond Mine (ADM). In Table 13 we can see that non-metallic mineral mining is the single largest industry category of employment for non-Indigenous workers resident in the region, and while mining is listed in the Top 20 industries for Indigenous employment the census seems to greatly under-represent the true picture of Indigenous participation in this industry. Mining employment for residents of the East Kimberley is focused on three main mine sites—ADM, Sally Malay, and Tanami Gold's Coyote mine while potential also exists for job opportunities in the West Kimberley via development of the Browse Basin liquefied natural gas resources.

For now, the main employer and the one most closely linked with Miriuwung and Gajerong people, is ADM. In June 2007, the total workforce associated directly with operations at the mine amounted to 775 (Table 14) and 58 per cent of these were locally-recruited. Virtually all Indigenous employees (181) were from the East Kimberley region and they comprised 40 per cent of the locally-recruited workforce. Most of these (116) were engaged at the mine directly with ADM while the remainder were in training positions through Kimberley Group Training. Over the past few years the Fly-in/Fly-out (FIFO) component of the ADM workforce has been

wound down and this trend will continue. By 2011, the aim is to have a mine site workforce of around 500, 80 per cent of which will be locally-recruited and 50 per cent of these local recruits (200) will be Indigenous. Thus, the current level of the Indigenous mine workforce will remain more or less stable through to 2018.

However, it is important to note that the turnover rate of local employees is around 10 per cent per annum (lower than FIFO rates at 20%). As a consequence, there will be a constant need to replenish the workforce with labour from within the East Kimberley. One option here is to track and re-hire experienced individuals possibly up to three or four times over a career. Another option is to ramp up work-readiness training for new employees with increased case management. These strategies arise because ADM has reached bedrock in terms of accessing readily-employable labour from within the region. As a result, some extension of local recruitment into the West Kimberley is being planned in order to sustain an in-flow of trainees. Currently, bus commuting is provided from Kununurra, Wyndham and Halls Creek, but FIFO from Broome and Derby is also likely to be added. This is an interesting observation as it provides an indirect measure of Indigenous labour supply shortage in the East Kimberley for just one enterprise.

While part of the labour shortage issue here is to do with the need for new and higher technical skills as the mine moves to an underground phase, other opportunities for more flexible (part-time) work opportunities are being explored, for example to cover surges in labour demand associated with ADM airport movements, village cleaning, catering and transport. These sorts of arrangements may well open up opportunities for more casual labour. Allied to this are alternatives to the current fortnightly roster such as one week on/one week off and five-day weeks for more administrative and service positions.

Ultimately, though, the success of ADM in attracting and holding on to labour is related to its apprenticeship/traineeship programs that are run by Kimberley Group Training in combination with its internal work-readiness assessment program. The success of these programs is a reflection of the capital and labour intensive nature of training inputs constructed around on-the-job activities and mentoring. At the base of this strategy is saturation marketing across the region for potential employees, followed by a four-day on-site assessment of life skills, followed by a 10 week on-the-job training experience (including a four-week Technical and Further Education (TAFE) block) and a good deal of mentoring with individuals and families. With a market lead in such activity, and with experience, and commitment to local recruitment, there seems little doubt that ADM will continue to operate as a key destination for local Indigenous workers, including Miriuwung and Gajerong, for the next decade or so. While at one level this capacity serves to drain local employable labour supply, turnover at the mine also provides a steady flow of trained and experienced workers back into the regional labour market.

GOVERNMENT AND COMMUNITY SECTOR

As noted earlier, Indigenous employment was mostly in the private sector up to the 1970s, but with structural change in the pastoral industry the trend for the Indigenous workforce has subsequently been towards greater reliance on the community sector for employment notably via CDEP. Unfortunately, ABS reporting is

Table 15. Levels and rates of Indigenous and non-Indigenous employment by government/non-government employer indicator: East Kimberley region, 2006

	Indigenous	Number Non- Indigenous	Total	Indigenous	Per cent Non- Indigenous	Total
Commonwealth	18	27	45	1.2	1.1	1.1
State government	75	376	451	5.2	15.2	11.5
Local government	393	34	427	27.0	1.4	10.9
Private sector	968	2,039	3,007	66.6	82.3	76.5
All workers	1,454	2,476	3,930	100.0	100.0	100.0

Source: ABS 2006 Census customised usual residence tables.

less than helpful in clarifying industry sector status since employment in CDEP is classified in ways unknown in the new census variable, 'government/non-government employer', as shown in Table 15. In the past, using the variable 'industry sector', CDEP has often been classified as local government, and even as private sector employment, and judging by the distribution of Indigenous employment in Table 15 this seems to be still the case with 'private sector' employment accounting for fully two-thirds of all Indigenous employment in the region. This is manifestly not the case. If we take the 2007 figure for CDEP employment of 1,179 (based on participant numbers at the time) and combine this with the data in Table 15 on the number of Indigenous workers in local government, then the private sector net of CDEP would amount to just 182. What Table 15 does highlight more reliably is the relative lack of Indigenous participation in public sector jobs in both the Commonwealth and State/Territory governments.

Aside from this problem with CDEP classification, the portrayal of Indigenous employment by industry sector masks a very important component of the Indigenous labour market (to date) that has been labelled elsewhere as the Indigenous Community Organisation sector (Rowse 2002). This sector is significant, not only for its growth over the past three decades, but also for the fact that employment levels in Indigenous community organisations have invariably been counter to economic cycles as they depend more on government funding regimes and the flow of localised private sector monies, not least based around such initiatives as mining and land use agreements (Langton et al. 2006). This dependence creates interesting and contrasting scenarios for future Indigenous employment—on the one hand, employment in the Indigenous community organisation sector via government funding is likely to decline as CDEP employment, in particular, is eroded—on the other hand, the potential for such employment via agreements such as the Ord Final Agreement and the Argyle Agreement is enhanced.

Unfortunately, data regarding this important labour market sector are either scarce or dated. For example, the most direct data are more than 10 years old. In the 1994 National Indigenous and Torres Strait Islander

Table 16. CDEP Programs, participant numbers and funding in the East Kimberley region^a, 2006–07

CDEP Program	Participants (Aug 2007)	2006 funding (\$) ^c
East Kimberley CDEP	428	10,364,376
Joorook Ngarni	160	3,549,440
Kununurra Waringarri	161	3,459,838
Warmun	145	2,644,187
Wunan	35	374,775
Ngaliwurru-Wuli	250 ^b	5,542,681
Total East Kimberley	1,179	25,935,297

Notes: a. Excludes Kalumburu.

b. 2006 estimate based on 2006 funding.

c. Includes wages and oncosts.

Sources: Program providers and Parliament of Australia Senate Order on DEEWR Departmental and Agency Contracts relating to the period 1 January 2006 to 31 December 2006.

Survey (NATSIS), an estimated 66 per cent of Indigenous people who were employed in the Kununurra Aboriginal and Torres Strait Islander Commission (ATSIC) Region reported that they were employed by an Indigenous community organisation (ABS 1996). While no similar such data have been available since the 1994 NATSIS, the Register of Aboriginal Corporations compiled by the Office of the Registrar of Aboriginal Corporations currently lists a total of 127 Aboriginal corporations in the East Kimberley (excluding any in the Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area). If these organisations employed just one Indigenous person each (almost inevitable by definition) then as Table 15 indicates, total Indigenous employment in this sector would exceed that in both Commonwealth and State government agencies. The likelihood is, of course, that it vastly exceeds this. On this evidence, then, it is both ironic and remiss that specific data do not exist regarding the main employment sector for Indigenous people in the region.

CDEP

In terms of numbers employed, by far the largest element of this Indigenous community organisation sector are activities administered by various CDEP programs. Apart from providing the bulk of Indigenous employment in the region, the scale of CDEP is also likely to be felt in the wider economy by boosting the relative size of the service industries sector. Trends in gross regional economic input due to CDEP are therefore of considerable interest beyond the primary function of the program in supporting various platforms for Indigenous participation in the labour market.

An indication of the relative size of current CDEP programs in the wider East Kimberley region is provided in Table 16 which shows the number of participants in each program (as of August 2007) as well as the amount of funding allocated by the Commonwealth Department of Employment and Workplace Relations (DEWR) in calendar year 2006 for wages and oncosts (mostly for equipment and materials). Overall, as of August 2007, there were 1,179 CDEP participants in the East Kimberley region with almost half of these administered by the East Kimberley CDEP based in Kununurra but also now responsible for the operations of the former Ngonjuwah CDEP in Halls Creek. Total funding for programs in 2006 (including on-costs) is also indicated and this amounted to \$25.9 million. It is estimated that 76 per cent of this amount (\$19.7 million) was allocated as income to CDEP participants.

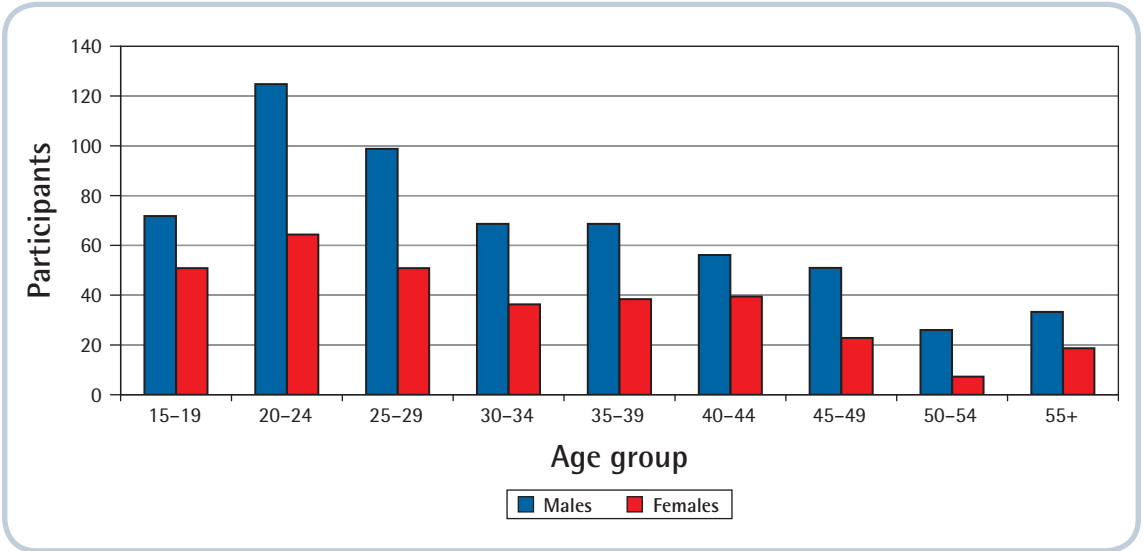
The first observation that arises from these data on CDEP participation is the fact that CDEP numbers appear to have grown in recent years since the aggregate participant numbers in the East Kimberley increased from 1,076 in 2001 to 1,179 (these figures exclude Kalumburu which had 80 participants in 2001). At the same time, some amalgamation of CDEP programs has occurred with eight programs in the Ord SSD now down to five. The main effect here has been the absorption of Ngonjuwah in Halls Creek into East Kimberley CDEP.

This increase in participant numbers is likely to have kept pace with growth in the working-age population which means that the rate of CDEP employment has most likely remained static since 2001. At the same time, it should be stressed that the participant numbers shown in Table 16 are very much point in time data. Given the new eligibility criteria and administrative arrangements for CDEP introduced by DEWR during 2006 there is every reason to expect that the rate of CDEP program participation will begin to fall as movement occurs off the scheme and into mainstream employment.

This process has already commenced and a collective movement of 250 participants off CDEP into mainstream work by the end of the financial year 2007/08 was set as a Key Performance Indicator (KPI) for programs in the region. In the recent past, mainstream destinations have been found across the labour market spectrum including at ADM, local building and fencing contractors, truck and heavy machinery operators, timber plantations, schools, clinics, and government departments, although notable exceptions have been the tourism, hospitality and retail industries. The majority of these outcomes have been urban-based in Kununurra, Wyndham and Halls Creek (as well as at ADM) and, not surprisingly, they have involved the most job-ready (and generally younger) individuals. One question that arises given the demographic, social and economic composition of program participants set against regional labour demand is the extent to which this level of movement off the program can be sustained, and whether or not a saturation point will quickly be reached (if, indeed, it hasn't already). As one measure of this, the need for much greater focus on providing basic life skills as a preliminary to work-readiness training is increasingly emphasized by local CDEP organisations.

The main structural framework for exploring such labour market opportunities in the region is that articulated in the Regional Partnership Agreement (RPA) on Indigenous employment in the East Kimberley signed in 2006 by the Australian and Western Australian governments, local CDEP organisations, employment service

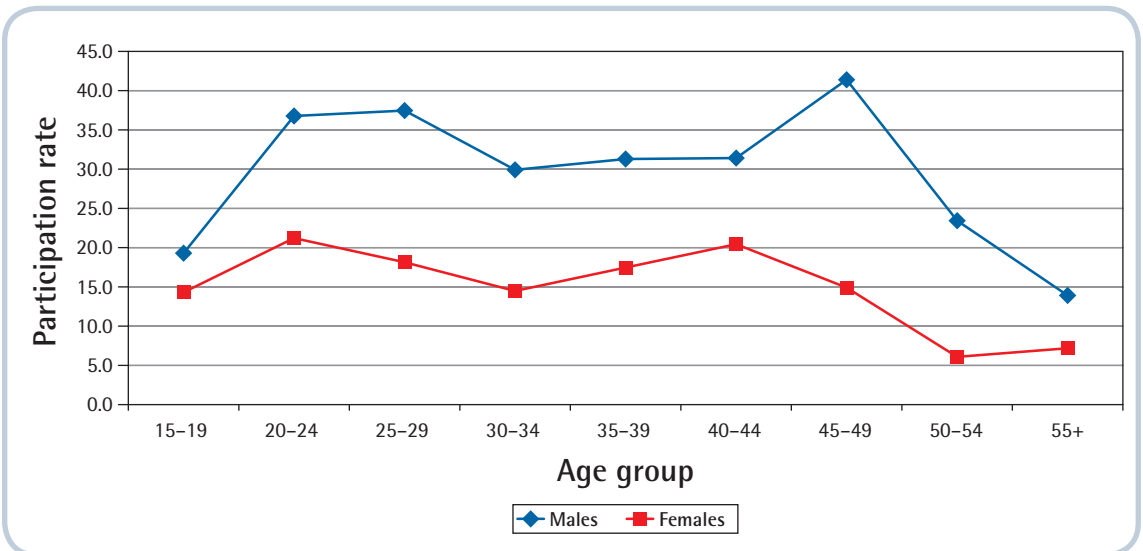
Fig. 11. Number of Indigenous CDEP participants by age and sex: East Kimberley^a, 2007



Note: a. Excludes Ngaliwurru-Wuli CDEP.

Source: CDEP program providers.

Fig. 12. Indigenous age and sex specific CDEP program participation rates: East Kimberley^a, 2007



Note: a. Excludes Ngaliwurru-Wuli CDEP.

Source: CDEP program providers.

providers, major private sector interests such as ADM and Roche, Wyndham East Kimberley Shire, and Kimberley TAFE (Australian Government 2006). Significantly, the MG Corporation is not a signatory.

While a number of regional organisations regard this RPA as ineffective to date, one allied activity has attempted to estimate the number and type of mainstream jobs currently on offer in the East Kimberley and to project these to 2009 (Stride Consulting 2007). The methodology for this exercise included an analysis of vacancies listed for the region on the DEWR Jobsearch website plus qualitative interviews with selected major businesses and organisations in the East Kimberley regarding their labour market forecasts combined with an estimate of current and future occupational turnover. This method claims to identify an average of 1,713 available mainstream jobs in the region each year between 2007 and 2009. In effect, though, by combining both stock and flow elements of available positions what this estimate really represents is a forecast of cumulative job vacancies built around a base of around 200 actual vacancies at any one time. As noted, this is less than the current KPI for movement off CDEP currently required by the combined regional programs.

DEMOGRAPHIC CHARACTERISTICS OF CDEP PARTICIPANTS

Given the obvious overall significance of CDEP in terms of Indigenous participation to date in the East Kimberley labour market, there is interest in establishing the cohort and gender effects of this with a view to contemplating the impacts of potential attrition as outlined above. For example, if CDEP participation is heavily skewed by age and sex, this may have implications in terms of its future use as an avenue into labour market participation. The numbers of participants in the East Kimberley by broad age group and sex are shown in Fig. 11. The first point to note is that male participants outnumber females at all ages and especially at younger ages (under 40). The second point is that participant numbers peak between the ages of 20–29 for both males and females with 36 per cent of all participants in this age range. The third observation is that numbers fall away beyond age 39, although there are relatively large numbers of older workers still on the program (27% over 39 years) and this raises questions about their medium-term eligibility for participation given the new impetus for training as transition to mainstream employment.

In demographic terms, it is participation rates rather than levels that are more relevant, especially when assessing the importance of the program in the regional labour market. Fig. 12 shows the Indigenous age and sex CDEP program participation rates for the East Kimberley in August 2007 using projected ERPs as the denominator. Obviously, male participation rates are much higher than female rates at all ages, and especially over the age of 20, with at least one-third of males between the ages of 20 and 49 employed by CDEP, whereas the rate of female participation hovers around 15 to 20 per cent and starts to taper off around age 40. Overall, this represents a substantial depth of reliance on the CDEP program and one that leaves the regional population vulnerable to the effects of any changes to the program.

CDEP ACTIVITIES

One drawback of census-derived industry and occupational data is their tendency to apply a blanket classification to CDEP scheme employment. As shown above, this results in a high concentration of Indigenous employment in government administration (especially local government) and as labourers. It is also the case that because of the employment substitution effect of CDEP, much work that is classified as CDEP actually covers a wider range of industry and employment categories than is apparent from census coding, a fact well illustrated by previous studies of CDEP (Misko 2004). An example here would be CDEP work in an aquaculture project—if this were in the mainstream labour market it would be classified under agriculture, fishing and forestry as an industry, and the workers may well be classified as farm hands or skilled agricultural workers depending on the nature of the job. Instead, the tendency is for them to be classified as labourers in local government. The obfuscation created by this blanket coding of CDEP work is well illustrated by the wide range of activities currently undertaken by participants in East Kimberley CDEP programs, based on information provided by program providers:

landscaping and dust control, municipal services community work crew, building and non-building construction, plumbing and electrical maintenance, painting and decorating, fencing, road maintenance, plant maintenance and operation, mechanical workshop, office administration, cleaning, rubbish collection, parks and gardens maintenance, aquaculture, market gardening, livestock management, pastoral work, horticulture, land and sea natural resource management, cultural activities, tour guides, drivers, media, visual and musical arts, print making, aged care, crèche, youth and men's support activities, women's centre, drug and alcohol worker, telecentre, law and justice program, night patrol, clinic assistants, teachers assistants, sport and recreation activities, office assistants, store assistants, bakery worker, fire station.

Clearly, census coding of CDEP masks a good deal of diversity in the composition of Indigenous participation in the regional economy. In particular, it is evident that CDEP underpins many of the vital tasks necessary to enable remote communities to function—in particular, jobs associated with the provision of municipal services, education, health, social services and administration. This is a crucial observation given the new role of CDEP programs as providers of employment services to individual workers with the ultimate aim of moving them off the program and into non-CDEP funded work in the mainstream labour market. This is because part of the strategy to achieve this is to more narrowly focus eligibility for CDEP work to those activities that have a training component and a potential route into mainstream work. At the same time, CDEP placements with host employers as health workers, in schools, in office administration, and in the delivery of municipal services may become vulnerable if responsibility for their continuation is ceded to State and Local governments. In such an event, the very viability of remote communities could be undermined. With these issues in mind, and given the fact that the CDEP program remains by far the largest single program employer of Indigenous labour in the East Kimberley, there is a need to better quantify the employment activity that has historically been supported by the program and to establish those elements of this that may

now be compromised by any rationalisation of designated CDEP work. There is also a need to better identify components of the mainstream regional labour market that CDEP might better articulate with either via direct contracting, sub-contracting and/or joint venturing, especially in respect of any direct and indirect employment opportunities associated with Ord Stage 2.

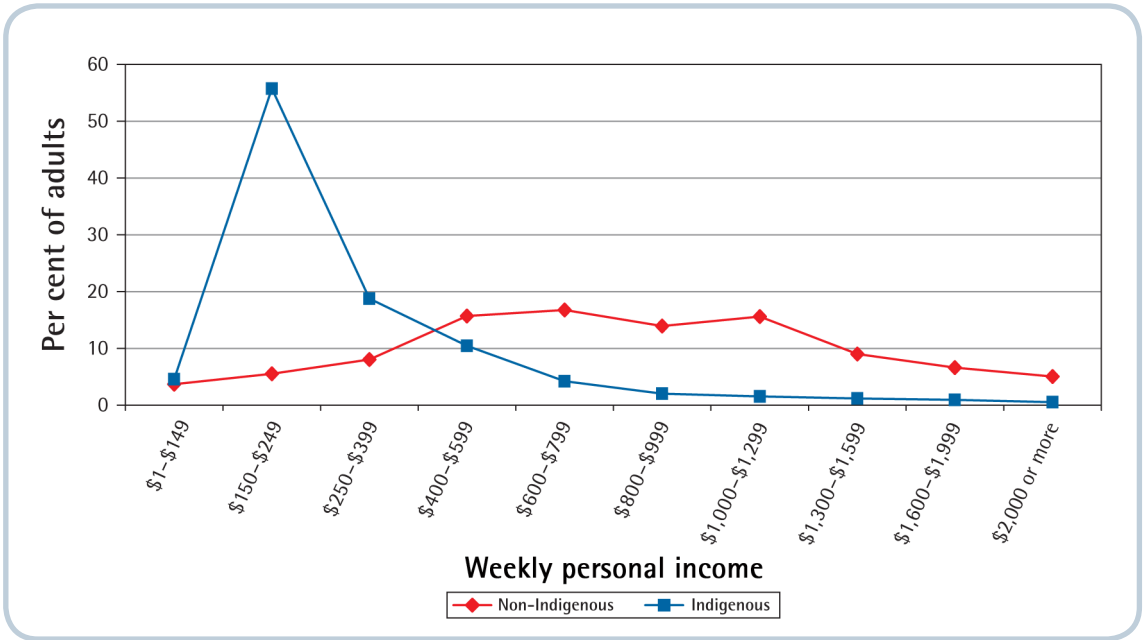
In this new policy environment it is possible that activities associated with cultural and language maintenance, arts and crafts, and natural resource management, may come under increasing funding scrutiny with potentially significant impacts on local economic participation. At the same time, innovative approaches to commercialising or recognizing many of these activities as mainstream work are being brokered (Altman 2001, 2005; Altman, Buchanan & Larsen 2007; Armstrong, Morrison, & Yu 2005). In the context of Ord 2, the MG Corporation identifies opportunities in conservation management including fire management, weed and feral animal control supported by Ranger courses at TAFE for Conservation Areas. In their estimation, such activities could extend well beyond the proposed irrigation area to include the Tableland areas of the upper catchments of the Ord, Pentecost and Fitzroy river systems. Alongside these land and sea management and cultural heritage and natural heritage protection activities, opportunities for cultural tourism also potentially exist (Hill et al. 2005; Altman, Buchanan & Larsen 2007). All of this, of course, requires that people are able to remain attached to country and that environments are protected. It also requires that these are recognized as legitimate economic activities and that they are adequately resourced.

Having said that, any transition from CDEP into mainstream work will be less than straightforward in the absence of training in life skills/work-readiness due to deep-seated deficiencies in the human capital base. For example, a 2007 skills audit from a reasonably representative sample by age and sex of 68 Miriwoong and Gajerong adults conducted by a labour hire company on behalf of MG Corporation found that for 75 per cent their entire previous employment had been in CDEP mostly as cleaners, labourers or station hands, while most others had worked with other local Aboriginal organisations. Of the sample, 20 per cent had poor literacy levels, 81 per cent did not have a drivers licence, and 9 per cent had no previous work experience at all.

INCOME DISTRIBUTION AND SOURCES

Indigenous people in the East Kimberley have a number of potential sources of cash income. These range from wage labour in CDEP, or in other more mainstream forms of work, unemployment benefit and other benefit payments from Centrelink, compensation or other agreed payments to traditional land owners, and private income from the sale of art works, crafts and other products. Set against these, of course, are routine deductions from income at source, such as those for house rent and power charges. Other income may also derive from the utilisation of land and marine resources but this may be imputed only and, in any case, little or no data exist.

Fig. 13. Weekly personal income distribution of Indigenous and non-Indigenous adults in the East Kimberley region, 2006

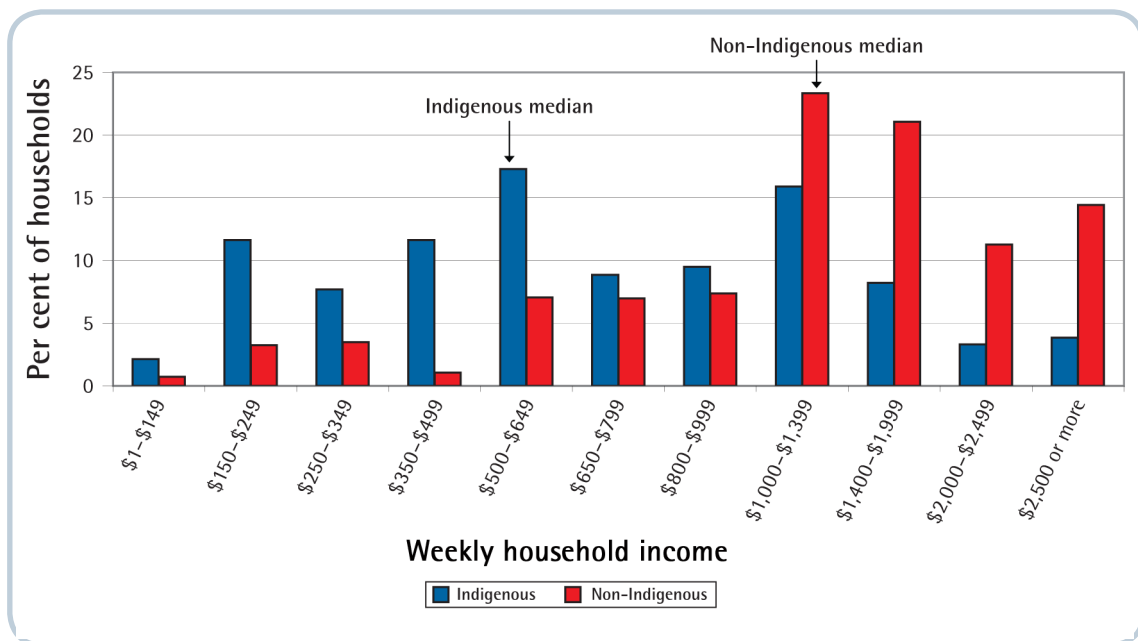


Source: ABS 2006 Census customised usual residence tables.

Accurate data on income levels, and on employment and non-employment sources of income, are notoriously difficult to obtain for Indigenous people due to a variety of conceptual problems. For one thing, most measures of income refer to a period of time, such as annual or weekly income, whereas the flow of income to individuals and households within the region is often intermittent. Census data, for example, are collected for all sources of income in respect of a 'usual week' and then rounded up to annual income. What might constitute 'usual weekly' income in many Indigenous households is difficult to determine. On the credit side, there is the likelihood of intermittent employment and windfall gains from sources such as gambling, cash loans, artwork, and compensation payments. This sort of income combines with debits, for example due to loss of employment and cash transfers to others, to create a highly complex picture even over a short space of time, and one that census methods of data gathering are likely to misrepresent.

Even if adequate questions were asked regarding income, high levels of population mobility would make it difficult to establish a consistent set of income recipients over a period of time. This is further complicated by job mobility with individuals often employed on a casual or part-time basis and moving into and out of longer-term jobs. As for the circulation of cash between individuals and households, information on this is non-existent. Also lacking are data on expenditure, although a common pattern reported from elsewhere is

Fig. 14. Indigenous and non-Indigenous weekly household income in the East Kimberley region, 2006



Source: ABS 2006 Census customised usual residence tables.

one of cash feast and famine against a background of high costs for essentials such as food and transport (Taylor & Westbury 2000).

The most comprehensive public source of income data for the region based on a consistent methodology is available from the census. It should be noted, however, that census data report income in categories, with the highest category left open-ended. Consequently, actual incomes have to be derived. In estimating total and mean incomes, the mid-point for each income category is used on the assumption that individuals are evenly distributed around this mid-point. The open-ended highest category is problematic, but it is arbitrarily assumed that the average income received by individuals in this category was one-and-a-half times the lower limit of the category.

Also, 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 reported is unknown. One distinct advantage of census data, however, is that it provides a means by which an estimate of dependence on income from welfare can be derived. This is done by cross-tabulating data on income with labour force status as a basis for distinguishing employment income from

non-employment income, the latter being considered a proxy measure of welfare dependence. It also allows for a comparison with non-Indigenous income.

INCOME DISTRIBUTION

Fig. 13 shows the relative personal income distribution for Indigenous and non-Indigenous adults enumerated in the East Kimberley region in 2006. It is clear that the bulk of Indigenous people have incomes at the lower end of the distribution with a clustering around \$150–\$249 per week (\$10,400 per annum) and a steady falling off thereafter. More than three quarters of Indigenous incomes (79%) are less than \$400 per week (\$20,800 per annum) which is the point at which the two income distributions crossover. In contrast, 82 per cent of non-Indigenous incomes are above this level.

Indigenous household incomes also fall substantially behind those of non-Indigenous households as indicated in Fig. 14, with nearly two-thirds of all Indigenous household incomes (59%) falling below \$800 per week. By contrast, more than three-quarters of all non-Indigenous household incomes (77%) fall above this level, with one-quarter in the top two income brackets of over \$2,000 per week.

INCOME SOURCES: EMPLOYMENT AND NON-EMPLOYMENT

The relative contribution made to total income from employment as opposed to from other sources is an important factor in terms of the economic situation facing Indigenous people in the regional economy of the East Kimberley. Approximate parity between incomes derived from social security and those derived from employment (after tax) is likely unless there is sufficient participation in well-paying jobs. This is important in terms of regional labour supply as it argued generally for Indigenous people that the gap between welfare and earned income is sufficiently low as to discourage job seeking (Daly and Hunter 1999). However, in the East Kimberley, this relationship is diluted somewhat by the substantial reliance to date on CDEP for Indigenous employment generation.

Table 17 shows Indigenous and non-Indigenous annual average personal incomes by labour force status separately for the region. The ratios of Indigenous to non-Indigenous incomes are also shown. Clearly, employment in the mainstream labour market returns higher personal income compared to CDEP. However, Indigenous people in mainstream work lag considerably behind their non-Indigenous counterparts with income levels 29 per cent lower. Also of note is the fact that Indigenous non-employment income is substantially lower than equivalent non-Indigenous income, especially for those not in the labour force. Reasons for this are not clear, though it should be remembered that these are census-based estimates and reporting around income can be ambiguous. Overall, average Indigenous incomes are 75 per cent lower than non-Indigenous incomes.

Given the relative lack of labour force participation and mainstream employment observed for the Indigenous population of the East Kimberley, it is important to establish an estimate of the overall reliance

Table 17. Indigenous and non-Indigenous annual average personal income (\$) by labour force status: Adult residents of the East Kimberley region, 2006

	CDEP	Mainstream	Unemployed	Not in labour force	Total
Indigenous (1)	12,720	36,886	12,766	11,523	16,472
Non-Indigenous (2)	26,493	51,994	17,647	15,637	46,415
Ratio (1/2)	0.48	0.71	0.72	0.74	0.35

Source: ABS 2006 Census customised usual residence tables.

Table 18. Estimated gross annual personal income (\$) by income source for Indigenous and non-Indigenous adult residents of the East Kimberley region, 2006

	Indigenous	Non-Indigenous	Total	Indigenous % share of income
CDEP	12,478,700	768,300	13,247,000	94.2
Mainstream employment	19,254,300	140,175,100	159,429,400	12.1
Unemployment	1,557,400	829,400	2,386,800	65.3
Not in the labour force	15,187,900	6,661,200	21,849,100	69.5
Total	48,478,300	148,434,000	196,912,300	24.6
Non employment (ex CDEP) (%)	34.5	5.0	12.3	
Non-employment (inc CDEP) (%)	60.3	5.6	19.0	

Source: ABS 2006 Census customised usual residence tables.

Table 19. Percentage distribution of estimated gross annual personal income by income source for Indigenous and non-Indigenous adult residents of the East Kimberley region, 2006

	Indigenous	Non-Indigenous
CDEP	25.7	0.5
Mainstream employment	39.7	94.4
Unemployment	3.2	0.6
Not in the labour force	31.3	4.5
Total	100.0	100.0

Source: ABS 2006 Census customised usual residence tables.

on income from non-employment (mostly government transfer payments) sources compared to income from employment. Furthermore, because CDEP employment comprises such a substantial share of gainful activity, it is also necessary to establish a separate estimate of the income value of this form of employment compared to more mainstream work. Accordingly, census-based estimates of the dollar contribution to gross regional income from employment and non-employment sources in 2006 are shown in Table 18.

These calculations indicate that the total gross annual personal income accruing to all adult residents of the East Kimberley as a whole in 2006 amounted to an estimated \$197 million. However, only 25 per cent of this amount (\$48 million) went to Indigenous residents despite the fact that they accounted for 50 per cent of the adult population. Of greater interest is the fact that only 12 per cent (\$19 million) of the total income generated by mainstream employment in the region (\$159 million) accrued to Indigenous workers. The implications of this are reflected in the relative levels of income derived from non-employment sources (Table 19), with as much as 35 per cent of total Indigenous income derived from non-employment sources (net of CDEP income) and fully 60 per cent if CDEP income is also considered a non-employment source owing to its notional link to Newstart Allowance. This compares to just five per cent of non-Indigenous income.

While it is recognised that CDEP represents a significant injection into the regional economy, it should be noted that the CDEP income figures presented here are likely to be underestimates. As noted earlier, information provided by DEWR in respect of CDEP program providers in the region in 2006 indicates a total estimated pay out of CDEP wages of almost \$20 million—an average of around \$16,710 per participant which is higher than the census-derived estimate. As noted earlier, the regional economic impact of CDEP is actually greater than this due to an additional amount expended (\$6.3 million) for CDEP on-costs (equipment and materials).

This distribution of income by notional source is of interest when compared to that recorded for Indigenous people across remote Australia by the 2002 National Aboriginal and Torres Strait Islander Social Survey. This revealed that CDEP accounted for 30 per cent of Indigenous incomes, that other wages and salaries accounted for just 19 per cent, and that government pensions and allowances accounted for the bulk of the balance (ABS 2004: 28). Thus, compared to the average for remote Australia, the East Kimberley appears to have a somewhat lower degree of reliance on CDEP income, more reliance on other forms of employment, and less reliance on non-employment income. However, as we have seen, there are questions surrounding the real level of overall dependence on government payments as estimated from census data, while the level of CDEP income estimated from administrative data has also been shown to be substantially greater than that calculated from census data.

SUPPLY-SIDE ISSUES: EDUCATION

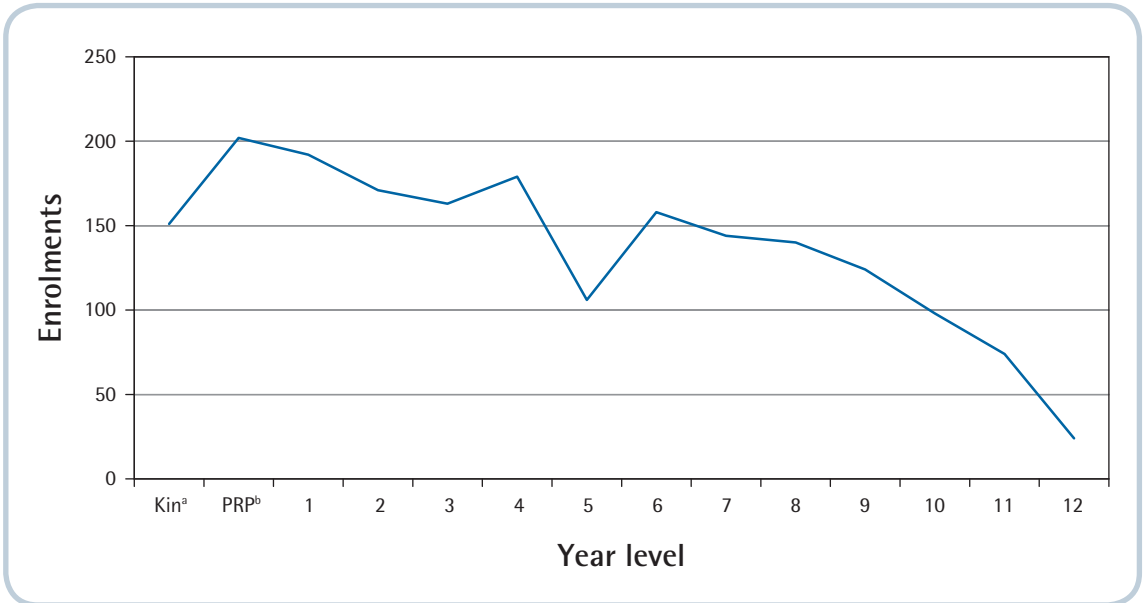
From the standpoint of participation in regional economic development, educational achievement is a key prerequisite. While studies reveal a clear positive relationship between Indigenous economic status and level of educational achievement as measured by standard indicators such as highest level of schooling completed, and post-school qualifications (Hunter 2004, Biddle 2007), an important shortcoming is their lack of measurement of the quality of education outcomes. For example, age at leaving school or highest level of schooling completed does not necessarily equate with school-leaving grade level achievement. In fact, for many Indigenous students in remote areas, age or grade level is a poor indicator of achievement as many Indigenous students perform substantially below their age and grade levels in terms of literacy and numeracy competencies. Thus, while data on participation in the education system provide an important indication of access and utilisation, it should be noted that they are less revealing about outcomes in terms of demonstrated ability, no matter from what perspective this might be measured.

PARTICIPATION

A total of 19 schools are located in the East Kimberley region administered by three different education sectors—Government, Catholic, and Aboriginal Independent. Collectively, they incorporate three high schools (in Kununurra, Wyndham and Halls Creek), five primary schools in these same towns, 11 Aboriginal community schools, and the Kimberley School of the Air. In 2007, estimated total enrolments in all of these schools amounted to 2,310, of which around 1,800 (78%) were enrolments of Indigenous children. All of these schools had majority Indigenous enrolments in 2007, although at Kununurra District High School there was an almost even distribution of Indigenous/non-Indigenous enrolments (at 51 and 49% respectively). All other schools had a much higher Indigenous shares and, to all intents and purposes, may be described as Indigenous schools. Of course, these figures do not include an unknown number of Indigenous children from the region who attend schools outside of the region, typically at high schools in Darwin and Perth.

Given this strong Indigenous presence in East Kimberley schools, the focus of teaching often aims to meet the aspirations of parents to educate their children on country and within an Indigenous cultural environment. Many curricula are therefore bilingual with Indigenous teachers trained on site to teach in the vernacular. School committees are invariably comprised of representatives from local families whose aims are cast as much in terms of an Indigenous social capital model of education as they are in terms of human capital development. Inevitably, this produces a different set of emphases in outcomes to those sought from the mainstream education system.

Fig. 15. Indigenous enrolments in East Kimberley schools by Year level, 2007



Notes: a. Kindergarten

b. Pre-primary

Includes government and non-government schools.

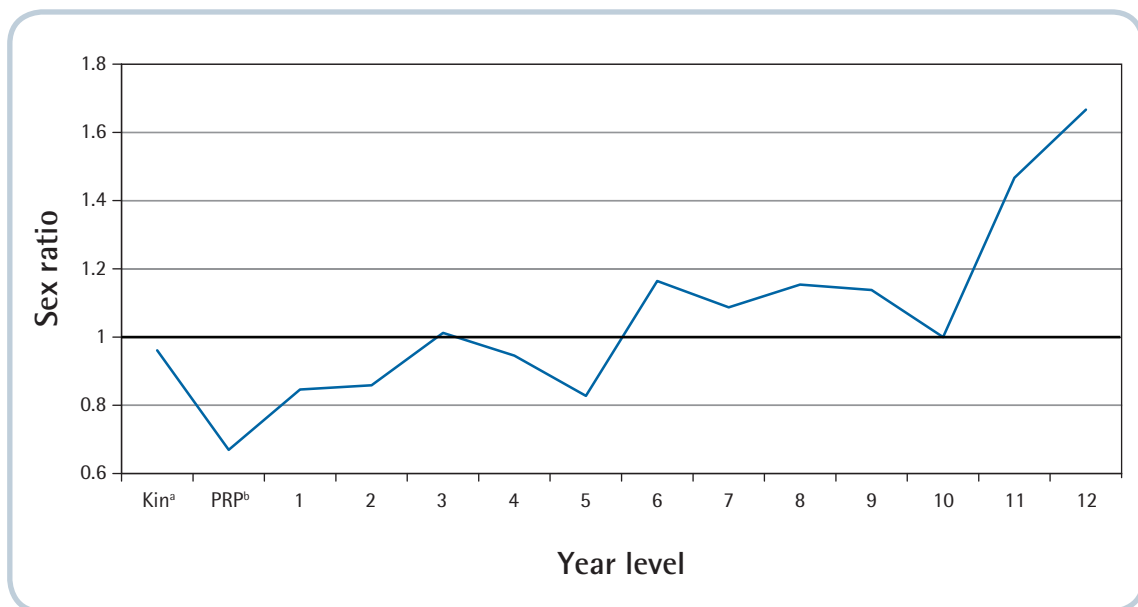
Source: Western Australia Department of Education and Training.

ENROLMENTS

In the first semester of 2007, a total of 1,902 Indigenous students were enrolled in East Kimberley schools between Kindergarten and Year 12, while 1,475 were enrolled between Years 1 and 10 (approximate to the compulsory school age range of 6–16 years). An additional 98 Indigenous students were enrolled in Years 11 and 12. These figures exclude any enrolments in Northern Territory schools (or in schools anywhere else outside of the East Kimberley for that matter). Unfortunately, data on the single year of age of school enrolments are only available for those in government schools and since this covers only 59 per cent of total Indigenous enrolments in the region it is not possible to calculate enrolment rates by age. At the same time, these government schools data do indicate a strong correlation between Year level and student age such that those in Year 1 tend to be age 6, those in Year 2 tend to be age 7, and so on, with no students above age 18.

On this basis, we can use the above number of 1,475 enrolments across the compulsory Year levels (Years 1–10) as a reasonable estimate of enrolled students of compulsory school age. Set against a projection

Fig. 16. Sex ratio of Indigenous enrolments in East Kimberley schools by Year level, 2007



Notes: a. Kindergarten
 b. Pre-primary
 Includes Government and non-Government schools.

Source: Western Australia Department of Education and Training.

of the regional Indigenous population aged 6–16 years in 2006 (Taylor 2004), this produces an estimated enrolment rate for compulsory school ages of 85 per cent. In terms of the distribution of enrolment numbers by Year level, Fig. 15 indicates an obvious association with age, although there does appear to be tailing off in numbers commencing in Year 9 (roughly age 14 years). Quite what the dip in enrolments at Year 5 represents is unclear.

One possible reason for this overall apparent low Indigenous participation in formal education at compulsory school ages might be an under-representation of male students as observed elsewhere in remote parts of Western Australia (Taylor 2006; Taylor & Scambray 2005). Accordingly, Fig. 16 shows the sex ratio of Indigenous enrolments in East Kimberley schools by Year level. While females outnumber males in preschool and primary enrolments, the reverse seems to be true at secondary levels. Not surprisingly, the overall sex ratio for compulsory school years is almost at parity (99.0). While gender thus appears to have no influence on gross enrolment levels, one difficulty in drawing final conclusions regarding this issue (and, indeed, in making a full assessment of education participation and outcomes for the Indigenous school-age population of the East Kimberley) is the lack of any data on students from the region who attend school elsewhere,

Table 20. Apparent retention rates for Indigenous students in select East Kimberley schools: 2007^a

	Apparent retention rates	
	Year 8 to Year 10	Year 10 to Year 12
Kununurra DHS ^b	90.0	17.8
Wyndham DHS	130.8	70.0
Halls Creek DHS	41.7	53.8
Kalumburu RCS ^c	100.0	n.a.
Oombulgurri RCS	42.9	n.a.
Ngalangangpum school	55.6	n.a.
Luurnpa Catholic school	44.4	n.a.
Yiyili Aboriginal Community school	71.4	n.a.
Kururrungku Catholic Education Centre	40.0	n.a.
All Indigenous students in Western Australia (2003)	94.0	26.0
All students in Western Australia (2003)	100.0	71.0

Notes: a. Second semester.
b. District High School
c. Remote Community School
Includes Government and non-Government schools.
Source: Western Australia Department of Education and Training; DIA 2005: 51.

mostly in the Northern Territory and in the south of Western Australia. This applies primarily to those of secondary school age.

RETENTION RATES

Table 20 shows apparent retention rates for Indigenous students in a selection of East Kimberley schools from Years 8–10, and from Years 10–12. Other schools in the region are omitted either because they have insufficient numbers with which to calculate either retention rate, or they have no secondary students at all. The apparent retention rate is defined as the number of full-time students in a particular year level as a percentage of their cohort group, measured usually at the commencement of secondary schooling at Year 8 or Year 10. While care should be exercised in interpreting these rates, they do provide an indication of the relatively low retention that occurs, especially to Year 12. For comparative purposes, figures for all students in Western Australia (in 2003) are also provided.

While Indigenous retention rates from Years 8–10 are generally lower than the State Indigenous average, the more interesting observation is that they are generally higher in respect of Year 10 to Year 12 retention,

Table 21. Attendance rates^a by year level for all students in East Kimberley government schools, 2007^b

Year level	Attendance by school at each Year level (%)							
	Wyndham DHS ^c	Kununurra DHS	Halls Creek DHS	Kalumburu RCS ^d	Oombulgurri RCS	Jungoranung RCS	Dawul RCS	
1	76.4	78.4	55.7	83.7	69.8	n.a.	94.5	
2	82.9	77.6	60.1	85.7	89.0	95.5	88.2	
3	88.6	76.6	64.6	90.3	95.0	96.9	90.3	
4	88.2	77.6	60.0	74.6	92.5	97.4	89.9	
5	90.9	77.4	63.7	73.6	91.3	n.a.	74.9	
6	86.8	79.2	62.6	73.9	87.4	89.5	89.9	
7	81.9	79.9	77.1	74.3	93.9	97.7	n.a.	
8	79.2	76.5	58.9	79.9	94.4	n.a.	n.a.	
9	83.4	75.0	43.9	72.8	91.2	n.a.	n.a.	
10	66.5	76.6	46.9	59.1	88.2	n.a.	n.a.	
11	79.4	72.9	51.5	55.2	n.a.	n.a.	n.a.	
12	82.9	92.6	59.3	28.7	n.a.	n.a.	n.a.	

Notes: a. Per cent of enrolments.
b. First semester.
c. District High School
d. Remote Community School

Source: Western Australia Department of Education and Training.

except in Kununurra. However, as noted above, these data are net of any migration away from the East Kimberley for the pursuit of high school education elsewhere. From a mainstream labour market perspective, it is this retention to Year 12 from Year 10 that holds most significance (ABS/Centre for Aboriginal Economic Policy Research (CAEPR) 1996) and in Kununurra especially this would need to be much higher in order to enhance labour supply.

ATTENDANCE

For most schools in the East Kimberley, the educational impact of relatively low levels of Indigenous school enrolment is compounded by low school attendance as indicated by the attendance rates in government schools shown in Table 21 (attendance data for non-government schools are not available). Unfortunately, separate rates for Indigenous students are also not available and the figures shown in Table 21 are therefore for all students (although, as noted, most enrolments are Indigenous). According to these data, attendance rates are quite variable with students in remote community schools generally displaying higher attendance. Of more

Table 22. Proportion of Western Australian students achieving the national benchmarks in reading: Total and Indigenous populations and MCEETYA geolocations, 2004

	Year 3	Year 5	Year 7
All students ^a	95.6% ± 1.4%	93.7% ± 1.0%	88.9% ± 1.1%
Indigenous students	84.1% ± 5.0%	74.2% ± 3.9%	57.6% ± 3.9%
Metropolitan students	96.4% ± 1.2%	94.9% ± 0.9%	91.0% ± 1.0%
Provincial students	95.1% ± 1.9%	92.4% ± 1.3%	87.0% ± 1.6%
Remote students	92.0% ± 3.2%	90.1% ± 2.3%	81.4% ± 2.6%
Very remote students	85.7% ± 4.9%	76.8% ± 4.7%	59.4% ± 4.7%

Notes: a. All Year 3, 5 and 7 students in Western Australia tested in both government and non-government schools in 2004, plus students who are exempt from testing (education support students) who are classified as not meeting the benchmarks.

Source: Western Australia Department of Education and Training.

interest is the relatively low attendance rates recorded in the larger schools especially in Kununurra and Halls Creek where no more than roughly three-quarters of those enrolled attend class at any year level. There is also some indication of a tailing off in attendance at higher year levels, especially at Years 9 and 10.

All of these official data and estimates regarding school access and participation are based on averages. What they do not show, and what would be more important to reveal (though nigh impossible) are the daily levels of individual attendance at school. Given the variability in attendance and high levels of short-term population mobility among the Indigenous population it cannot be assumed that aggregate data refer consistently to the same individuals. Since children often accompany adults in their movements across, into, and out of the region it seems likely that some mobile children may be overlooked as part of the regular school population. Moreover, since attendance registers are taken each morning, no records exist regarding student participation beyond morning sessions. The prospect thus remains that the attendance rates presented here, especially those for Indigenous students, are overly favourable.

OUTCOMES

In Western Australia, outcomes from education are measured using benchmarks devised by the Western Australian Literacy and Numeracy Assessment program (WALNA). This is a curriculum-based assessment that tests students' knowledge and skills in numeracy, reading, spelling and writing. The WALNA test is administered annually to all students in Western Australian schools (including Catholic schools) in Years 3, 5 and 7, although a few exemptions are made. The test gathers information on the performance of school children in relation to nationally agreed benchmarks in numeracy, reading, spelling and writing, and in relation to that of other Year 3, 5 or 7 students across Western Australia. The national benchmark

Table 23. Highest year of schooling completed: Indigenous male and female adults, East Kimberley region, 2006

	Males	Females Number	Total	Males	Females %	Total
Year 12	140	177	317	9.9	11.4	10.7
Year 11	133	205	338	9.4	13.3	11.4
Year 10	452	523	975	32.1	33.8	33.0
Year 9	217	176	393	15.4	11.4	13.3
Year 8 or below	328	312	640	23.3	20.2	21.7
No school	139	154	293	9.9	10.0	9.9
Total	1,597	1,769	3,366	100.0	100.0	100.0

Note: Refers to population >15 years of age and excludes highest level of schooling not stated.

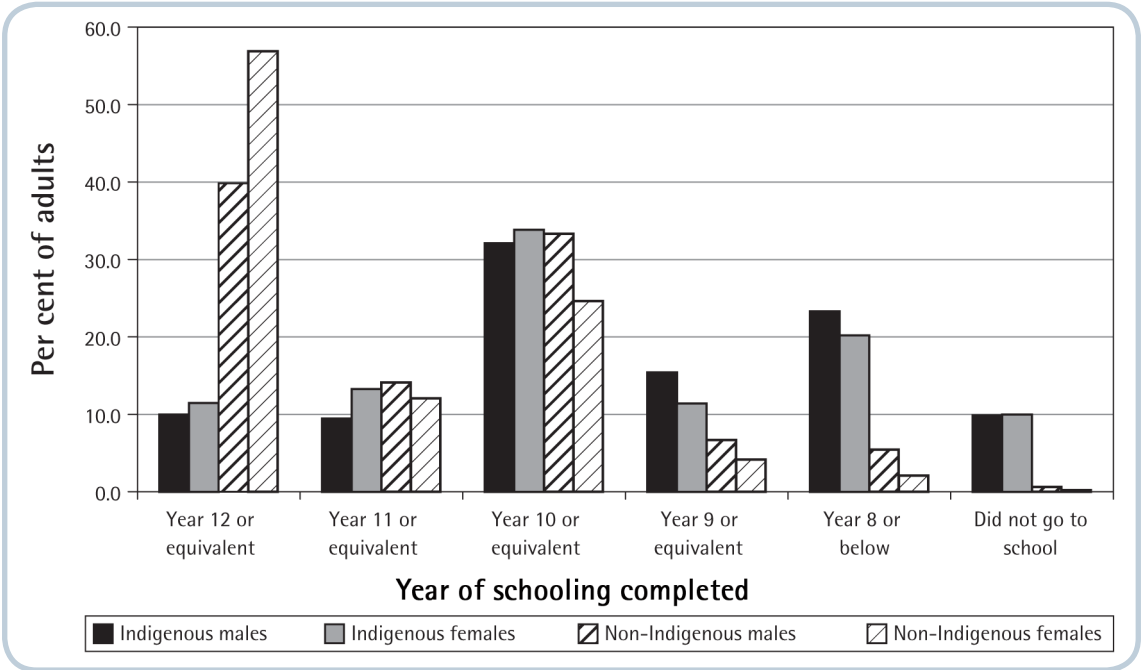
Source: ABS 2006 Census customised usual residence tables.

standard is an agreed standard of performance that professional educators across the country deem to be the minimum level required for students at particular key stages in their educational development in order to make adequate progress. By providing an indication of how students are faring against the national benchmark and in relation to state performance, the WALNA assessment assists in identifying those students who would benefit from extension, as well as those not meeting the minimum expected standard.

Unfortunately, the Western Australia Department of Education advises that the relatively small numbers of Indigenous students who sit for these tests in East Kimberley schools prevents the construction of reliable estimates of Indigenous student achievement specifically for that region. As a consequence, it is not possible to establish precisely the number of Indigenous students within the East Kimberley who are likely to progress with, or without, difficulty towards an outcome that would satisfy the requirements for a successful engagement with the mainstream labour market (at least as determined by benchmark achievements). However, for the first time, the 2004 National Report on Schooling reports estimates of the proportion of students achieving benchmark scores at the Ministerial Council on Education, Employment, Training and Youth Affairs (MCEETYA) geolocation level and the data for reading achievement for Western Australia are shown in Table 22. In this classification, all schools in the East Kimberley fall within the 'very remote' category.

Ultimately, the true levels for Indigenous students in the East Kimberley remain unknown as matter of public record, but we can assume that they do not exceed those implied in Table 22. Thus, for Indigenous students who are tested, between 80.8 and 90.6 per cent achieve Year 3 national reading benchmarks. By Year 5 this range falls to between 72.1 and 81.5 per cent, and by Year 7, somewhere between just over half and two-thirds of all students (54.7 and 64.1%) achieve national benchmarks. By contrast, achievements

Fig. 17. Highest year of schooling completed: Indigenous and non-Indigenous male and female adults, East Kimberley region, 2006



Source: ABS 2006 Census customised usual residence tables.

levels for non-Indigenous students remain as high as 87.8–90 per cent by Year 7. While testing in Northern Territory schools measures benchmarks according to the Multilevel Assessment Program, outcomes for remote community schools are if anything lower (Northern Territory Government 2007: 44).

The impact of relatively low retention rates is reflected in census data on the highest levels of schooling completed as reported by all adults in 2006 (those over 15 years). These levels are shown in Table 23 for Indigenous males and females. Three features stand out. First, females achieve slightly higher levels of schooling than males. Second, neither group excels in educational achievement with well over one-third completing school at below Year 10 level. Third, Year 10 represents the largest single year of school attainment for both men and women pointing to the effects of lack of retention to Year 12. Finally, around 10 per cent of adults have had no schooling, although from a labour market planning perspective this may not be significant as they tend to be concentrated in older age groups reflecting the legacy of past exclusionist policies.

Of more immediate interest is the fact that according to the 2006 Census there were 317 Indigenous adults (around 11%) in the East Kimberley region with Year 12 completion. Of course, this is a count only and if

this rate were applied to the projected adult 2006 population then it would produce an estimate of around 411 in the Ord SSD. Clearly there is a sizeable cumulative experience of school completion through to the end of compulsory schooling, but as numerous studies based on census and survey data have shown (ABS/CAEPR 1996; Biddle 2007; Hunter & Schwab 2003), the relative lack of retention and completion beyond Year 10 is potentially significant in terms of explaining differential rates of Indigenous and non-Indigenous participation in mainstream employment. Certainly, the collective educational experience of schooling among the regional Indigenous population lags well behind that of the non-Indigenous resident population as demonstrated in Fig. 17.

This shows that barely 10 per cent of Indigenous adults have Year 12 completion compared to 40 per cent of non-Indigenous males and almost 60 per cent of non-Indigenous females. Conversely, much higher proportions of both Indigenous males and females completed school at Year 9 level or below compared to their non-Indigenous counterparts, while around 10 per cent of Indigenous adults (all at older ages) had no school experience.

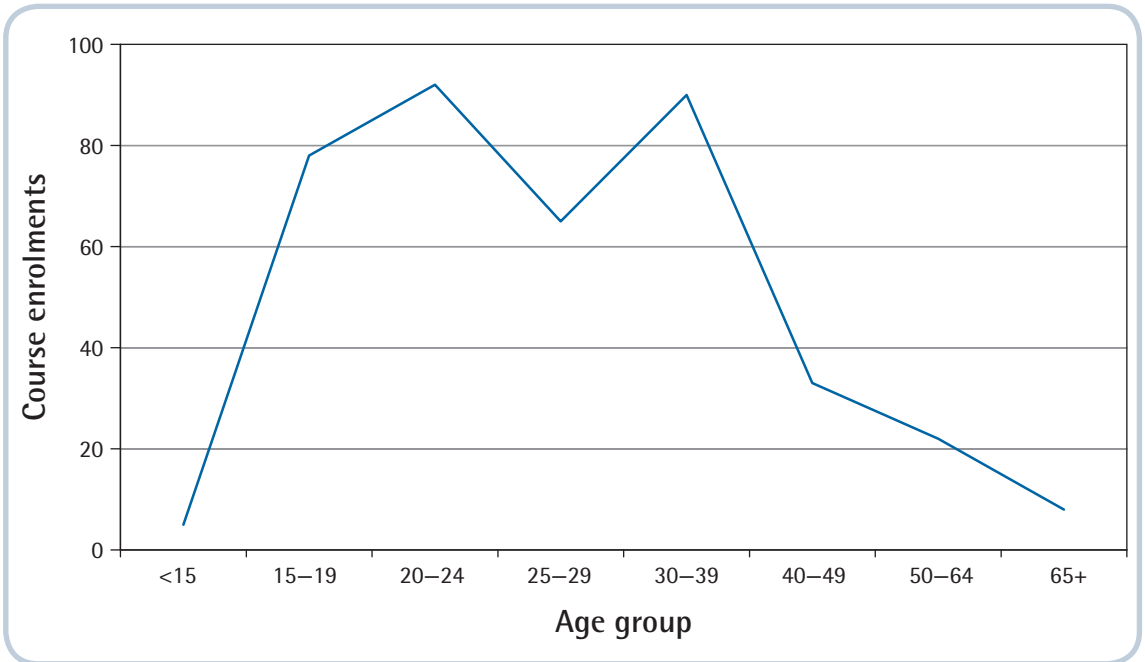
VOCATIONAL AND TECHNICAL EDUCATION (VTE)

School-based and post-secondary education and training leading to the acquisition of formal workplace qualifications is available in the East Kimberley region from a variety of public, private and community providers. Much of the participation in VTE through these outlets is undertaken via CDEP or Structured Training and Employment Projects.

It is difficult to be precise about the regional student population in the VTE sector at any point in time as colleges outside of the region can offer on-line courses, while providers may also offer variable fee-for-service courses that are not included in standard data collection. It is also the case that students from the region travel to other parts of the State (notably Perth) for particular modules and courses. The data presented here refer to publicly funded providers (TAFE) as well as private providers that receive public funds for the provision of VTE in the region. Enrolment data for private providers undertaking VTE activity on a fee-for-service basis are not collected and so do not form part of this profile.

According to data provided by the Department of Education and Training, a total of 1,127 students were enrolled in VTE courses in the East Kimberley region (excluding Ngarliwurrurru-Wuli Indigenous Area) in August 2007. Of these, 393 identified themselves as Indigenous students, 232 as not Indigenous, while as many as 499 (39%) provided no information either way. Ultimately, then, the actual number of Indigenous enrolments is unknown. Of those identified, most were males (58%) and most were enrolled at TAFE colleges (91.2%). Of these latter, 92 enrolments were in Certificate I level courses, 103 at Certificate II, 60 at Certificate III, and just three at Certificate IV (the education level of 105 course enrolments was not classified). In contrast, non-TAFE enrolments tended towards higher level courses with five at Certificate II, 18 at Certificate III, eight at Certificate IV, and two at Advanced Diploma level. As for the age distribution of Indigenous enrolments,

Fig. 18. Indigenous VTE course enrolments by broad age group: East Kimberley region^a, 2007^b



Notes: a. Excludes Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area.

b. As at August.

Source: Western Australia Department of Education and Training.

participant numbers are highest in the 15–24 year age group with a secondary peak in the thirties age range and a steady decline thereafter (Fig. 18).

A wide range of VTE courses are available across several qualification fields and the distribution of Indigenous enrolments is shown in Table 24 by broad field category. Clearly, courses in the general field of society and culture predominate, followed by engineering and mixed field programmes. The first of these refer to general education for adults courses while engineering courses include automotive vehicle servicing and industrial skills entry training. Not surprisingly, the composition of course enrolments largely reflects the occupational and industry nature of Indigenous participation in the regional labour market as revealed earlier, with considerable emphasis on training for community-based services and activities and less on trades.

Of particular interest, though, in terms of Indigenous participation in the labour market, are enrolments in VTE industry training packages. In 2007, a total of 204 out of the 396 identified Indigenous students (51%) were enrolled in a range of National Training Package qualification courses, although in regard to which particular industries is not known.

Table 24. Indigenous VTE enrolments by major field of education: East Kimberley^a, 2007^b

Qualification field of education	Enrolments
Society and culture	98
Engineering and related technologies	68
Mixed field programmes	67
Agriculture, environmental and related studies	37
Management and commerce	37
Creative arts	33
Education	29
Health	20
Architecture and building	14
Food, hospitality and personal services	2
Information technology	1

Notes: a. Excludes Ngariwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area.

b. As at August, 2007.

Source: Western Australia Department of Education and Training.

Table 25. Indigenous VTE module outcomes in the East Kimberley, 2007^a

Module outcome	No.	%
Competency achieved/Pass	473	50.8
Non-assessable enrolment—Satisfactorily completed	169	18.1
Competency not achieved/Fail	118	12.7
Withdrawn	171	18.4
Total assessable module enrolments	931	100.0

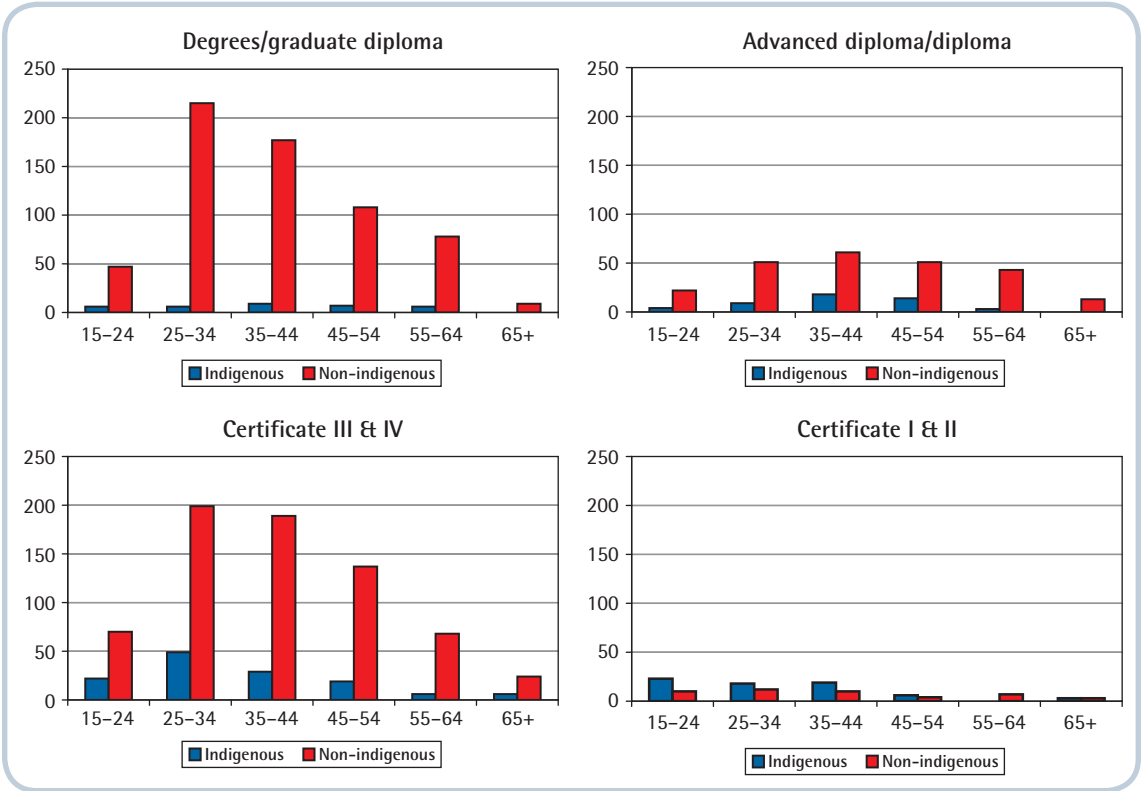
Notes: a. As at August 2007. Excludes 1,020 continuing module enrolments.

Source: Western Australia Department of Education and Training.

OUTCOMES

To measure performance in the VTE sector, the Western Australian Department of Education and Training has identified a number of key performance measures relating to efficiency, effectiveness and quality. With regard to the effectiveness of the training system, the key indicator is the rate of successful completion of modules—the components from which courses are constructed. If we exclude modules with a continuing enrolment, out of 931 finalised module enrolments identified for Indigenous students in August 2007, more than two-thirds (69%) had been passed or satisfactorily completed and the remaining one-third (31%) had failed or the student had withdrawn (Table 25).

Fig. 19. Indigenous and non-Indigenous adults with reported qualifications by level and age group: East Kimberley region, 2006



Source: ABS 2006 Census customised usual residence tables.

QUALIFICATIONS

A key human capital requirement in the regional labour market, and a primary output from the education and training system, is the acquisition by individuals of formal qualifications. While program data can reveal numbers passing through courses, the five-yearly census remains the most comprehensive source of data on the sum total of individuals within the region who are likely to hold non-school qualifications.

At the 2006 Census, a total of 3,640 adults counted in the East Kimberley region reported having some form of non-school qualification. Unfortunately, detailed analysis of this census output on qualifications is greatly hampered by a high rate of non-response to the census question. As much as one quarter of the 3,640 adults with a non-school qualification did not indicate an Indigenous status, and of the 830 who did indicate that they were Indigenous fully 58 per cent provided no details of the level of their qualification. Thus, only 344

Indigenous adults reported their level of qualification compared to 1,664 non-Indigenous adults. For what it is worth the levels reported for each of these populations are shown in Fig. 19 by broad age group.

Given that Indigenous people account for just over half of the adult population of region, the massive gap in levels of post-school qualification held at all ages compared to non-Indigenous residents is only too apparent. This is especially so at higher levels of qualification—degrees and Certificate levels III and IV—which constitute the main level of qualification for non-Indigenous residents. Only at Certificate I and II levels do Indigenous people hold more qualifications, although this is mostly because so few such qualifications are reported overall.

SUPPLY-SIDE ISSUES: HOUSING

Access to sufficient housing and related environmental health infrastructure commensurate with demand has been a constant struggle for Indigenous families in the East Kimberley for the past few decades. This continues to produce negative consequences for population characteristics that directly impinge on labour supply and economic participation, notably health status and educational performance. There are several reasons for the persistence of poor housing outcomes for Indigenous people.

First, rapid population growth and low net out-migration has maintained a high rate of new family formation within the region. Second, the migration of Indigenous people within the region off pastoral properties and into the towns of Halls Creek, Kununurra and Wyndham as well as into Warmun from the 1960s onwards placed considerable strain on available urban housing stock and added to the pressures for new dwelling construction and provision of social housing. Third, the influx of large numbers of relatively wealthy non-Indigenous residents into East Kimberley towns (especially into Kununurra) has left poorer Indigenous residents at a disadvantage in what has become a high cost private rental market. Fourth, the program-dependent supply of low cost community-managed and public rental accommodation has failed to keep up with demand. Finally, increased dispersion of the Indigenous population to outstations has strained the capacity (and the willingness) of governments to deliver infrastructure.

A simple measure of limited progress in providing an adequate housing supply to the regional Indigenous population is found in the overall occupancy rate for Indigenous dwellings. This has only fallen from 7.5 to 6.3 per cent over the past 20 years. As a benchmark, this 2006 rate can be compared with an estimated average of 3.9 persons per Indigenous dwelling recorded for Western Australia as a whole (based on 2006 dwelling counts and population projections from the 2001 Census).

As noted, part of the difficulty in overcoming the backlog in housing need has been rapid growth of the Indigenous population, as well as increased population dispersion. Any attempt to establish the hierarchy of settlement across the region using 2006 ABS Community Housing and Infrastructure Needs Survey (CHINS) data is denied by the Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) practise of suppressing reported population numbers for each locality of less than 50 persons. However, it

Table 26. Number of occupied dwellings and estimated occupancy rates for Indigenous households: East Kimberley region^a, 2006

	Dwellings	Population	Occupancy
Usual residence count	1,022	4,378	4.6
Projected ERP ^b	1,022	6,619	6.5

Notes: a. Excluding the Ngarliwurru-Wuli Indigenous Area.

b. Based on Taylor 2004.

Source: ABS 2006 Census of Population and Housing.

can be established from CHINS data that 42 out of the 58 discrete Aboriginal communities in the former Kununurra ICC Region had populations of less than 50 persons. Of the remainder, Kalumburu and Balgo were the largest with an estimated 450 persons each, followed by Warmun and Mardiwah Loop with 300 each.

In addition to this, across the Northern Territory border, 12 out of 15 discrete communities had a population of less than 50 persons with the largest population (of 125 persons) found at Bulla. Thus, while most of these discrete communities are small rural outstation and pastoral settlements, a number are town camps and others are larger service centres and townships. Using 2001 CHINS data as a guide, an estimate of around 4,440 Indigenous people in the East Kimberley and neighbouring parts of the Northern Territory are resident in, or spend some time in, small discrete communities most of which are removed from urban centres and places of mainstream employment with limited scope for the development of economic opportunity in situ (Taylor 2004: 14).

DWELLINGS AND OCCUPANCY

The five-yearly census is an enumeration of population and housing. It provides a range of details regarding the number and structure of dwellings and it is possible to classify these according to Indigenous or non-Indigenous occupancy and other housing-related variables. Table 26 shows the number of Indigenous dwellings in the East Kimberley region (classified as such if one or more adults in a dwelling are Indigenous) together with occupancy rates calculated using census count data and projected population estimates as the base.

Because occupancy rates reflect numbers per dwelling, the 2006 Census count of Indigenous people presents an issue since, as we have seen, this indicated a decline of almost 15 per cent in the usual resident Indigenous population in Halls Creek Shire, and of three per cent in Wyndham-East Kimberley. As already noted, set against high rates of natural increase and little evidence of substantial net Indigenous migration loss from the East Kimberley, these trends seem improbable and most likely arise because of a poor census count in 2006. For this reason, the adequacy of housing provision reported in the census is also estimated in Table

Table 27. Percentage of dwellings requiring major repair or replacement in Kununurra ICC Region and Ngarliwurrurru–Wuli Indigenous Housing Organisation Area by locality, 2006

Kununurra		Ngarliwurrurru–Wuli	
Locality	Dwellings requiring major repair or replacement (%)	Locality	Dwellings requiring major repair or replacement (%)
Cattle Creek	100.0	Police Hole	100.0
Warrayu	100.0	Bamboo Springs	80.0
Warmun	92.7	Bobs Yard	66.7
Mindibungu	85.1	Doojum	66.7
Balgo	61.5	Barrak Barrak	50.0
Mulan	50.0	Bubble Bubble	50.0
Wuggubun	46.2	Gilwi	50.0
Mirima	40.9	Bulla	44.4
Kalumburu	38.3	Mialun	35.7
Kundat Djaru	34.5	Myatt	33.3
Glen Hill	33.3		
Koongie Park	33.3		
Oombulgurri	29.6		
Woolah–Doon Doon	22.2		
Yardgee	18.8		

Source: 2006 Community Housing and Infrastructure Needs Survey, FaHCSIA.

26 using projections to 2006 of the 2001 Indigenous ERP (Taylor 2004). While this necessarily restricts the analysis to the Ord SSD, this only excludes 24 Indigenous dwellings in the Ngarliwurrurru–Wuli Indigenous Area from the analysis.

The effect on the occupancy rate of using estimates as opposed to census counts is clear with a 41 per cent higher rate. In 2006, a total of 1,022 Indigenous dwellings were recorded by the census in the Ord SSD. Most of these were separate houses (74%), and 17 per cent were recorded as improvised dwellings or caravans. On the basis of census counts, the average occupancy rate for these dwellings amounted to just 4.6 persons, but this rises to 6.5 persons on average if projected estimates of population are used.

However, overall rates at the Shire level tell only part of the story. At sub-regional levels, and at the individual community level, a good deal of variation in housing occupancy rates is evident. Much depends, also, on whether one takes into account the functionality of available dwellings from an environmental health perspective. Thus, while the continuance of high Indigenous occupancy rates partly reflects larger Indigenous household sizes based on a cultural preference for extended family living arrangements, it is also a measure

of the inadequacy of housing stock available to accommodate the regional population. The depth of this imputed housing need is supported by more direct data from the 2006 CHINS on the condition of dwellings owned or managed by Indigenous Housing Organisations (IHOs) in discrete Indigenous communities across the East Kimberley region.

For high cost areas, such as the East Kimberley, IHO dwellings were categorised by the CHINS according to the extent of repairs needed in the following way (ABS 2007d: 221):

- Minor repairs—repairs of less than \$33,000
- Major repairs—repairs of between \$33,000 and \$100,000
- Replacement—repairs of \$100,000 or more

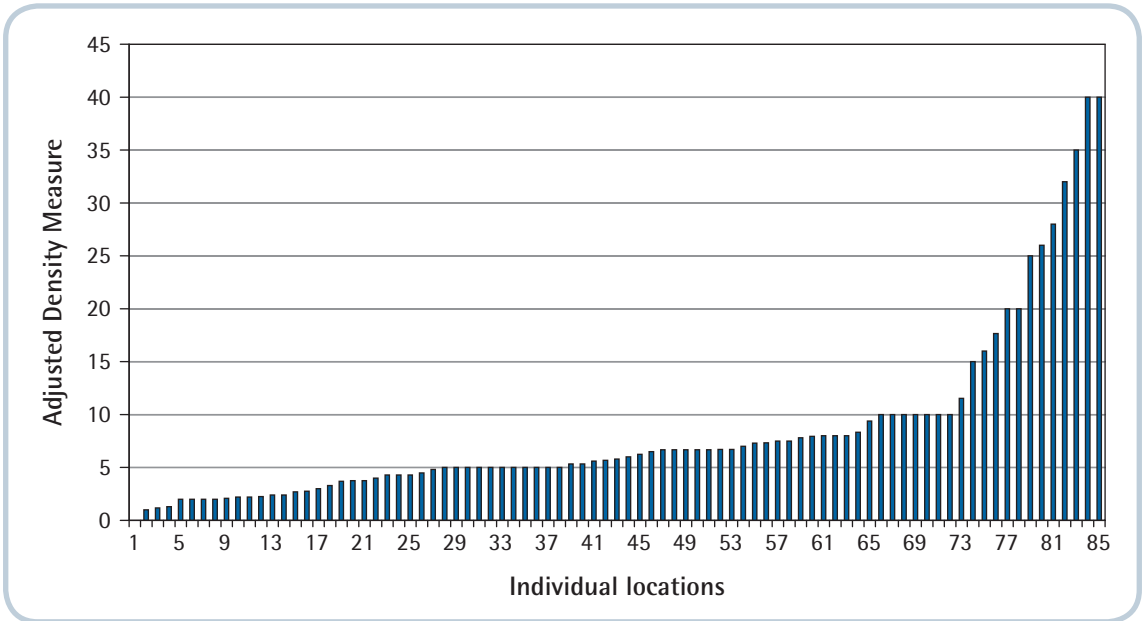
A total of 622 dwellings were reported in the Kununurra ICC Region and 95 in the adjacent part of the Northern Territory managed by the Ngaliwurru-Wuli Association. Of those in the Kununurra ICC Region, 239 (38%) were found to be in need of major repairs or replacement, while in the Ngaliwurru-Wuli Association Area 39 dwellings (or 41% of the housing stock) fell into this category. In effect, according to the 2006 CHINS, more than one-third of the housing stock in discrete Indigenous communities in the East Kimberley region required either replacement or significant upgrading. Table 27 shows those localities in the Western Australian and Northern Territory components of the Ord catchment area where this requirement for new housing is critical as measured by the fact that up to one-fifth of the dwelling stock required major repair or replacement. In all remaining localities the CHINS data indicate that the housing stock requires only minor or no repairs.

As shown, in a few places the entire housing stock required major repair or replacement, while some of the larger settlements in the region (especially Warmun and Balgo) reported notable housing need in 2006. One locality that could (and should) also be listed among those with substantial housing need is Mardiwah Loop in Halls Creek. While the 25 recognised separate dwelling structures there reported only minor repair needs or none at all, a total of 40 occupied caravans or tin sheds were also identified and this sort of improvised arrangement represents a direct measure of housing inadequacy.

Of course, these data indicate nothing of the additional stock of housing required to accommodate new household formation and reduce overcrowding. With respect to this latter point, some sense of progress here can be gauged by comparing the number of houses constructed over the 12 months prior to the 2006 CHINS with the number of dwellings demolished. In the Kununurra ICC Region, 91 new houses were constructed and 43 were demolished leading to a net improvement in available housing stock. In the Northern Territory, on the other hand, in the Ngarliwurru-Wuli Indigenous Housing Organisation Area, 38 houses were written off or demolished and none were built. Overall, then, the housing stock in discrete Indigenous communities across the combined Ord catchment area barely increased at all.

One final measure of housing stress is provided by an affordability calculation for low-income rental households. This complex calculation is currently only available for the West Kimberley at the former ATSC

Fig. 20. Adjusted EHNS population density measures for dwellings in discrete Indigenous communities in the East Kimberley region^a, 2004



Note: a. Excluding Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area.

Source: Government of Western Australia 2004 EHNS.

regional level using 2001 Census data (National Centre for Social Applications of GIS 2003). This shows that in the Kununurra ATSIC Region around 14 per cent out of 394 Indigenous rental households in the lowest two income quartiles were paying more than 25 per cent of their income as rent in 2001 (National Centre for Social Applications of GIS 2003: 70). Compared nationally, this was a relatively low rate with the Kununurra ATSIC Region ranked 30th out of 36 ATSIC Regions in terms of an affordability stress rate (National Centre for Social Applications of GIS 2003: 70).

Of course, these data reveal nothing of the quality of housing stock. A more refined (and meaningful) measure of occupancy is based on persons per functional dwelling (defined against minimum environmental health criteria). Data for this calculation are available from the 2004 Western Australia Environmental Health Needs Survey (EHNS) and resulting population density measures are shown for participating communities in the East Kimberley in Fig. 20. These adjusted measures produce some excessively high occupancy rates of up to 40 persons per dwelling, especially in smaller outstation settlements. Overall, in most communities, adjusted rates are found to be substantially higher than the crude rates, highlighting the importance of factoring environmental health standards into calculations of housing adequacy.

Table 28. Indigenous and non-Indigenous dwellings by tenure type: East Kimberley region^a, 2006

	Fully owned	Being purchased	Being rented	Other tenure	Total ^b
Indigenous dwellings					
No.	31	45	801	22	899
Per cent	3.5	5.1	89.0	2.3	100.0
Non-Indigenous dwellings					
No.	307	299	757	25	1,388
Per cent	22.1	21.5	54.5	1.8	100.0
Notes: a. Excluding the Ngarliwurru-Wuli Indigenous Area.					
b. Excluding tenure not stated.					
Source: ABS 2006 Census of Population and Housing.					

HOUSING TENURE

Australia as a whole has one of the highest home ownership rates among Organisation for Economic Co-operation and Development (OECD) countries. In line with this, 71 per cent of all Western Australian households in 2006 lived in a dwelling that was either fully owned or mortgaged with only 28 per cent renting. The situation for most Indigenous Australians is quite the reverse and this is no less so than in the East Kimberley as outlined in Table 28.

Less than 10 per cent of Indigenous dwellings in the region are fully owned or being purchased and while the rate for non-Indigenous dwellings is much higher at 44 per cent this too is relatively low in national and state-wide terms. Consequently, the predominant form of tenure in the region is rental. This accounts for more than half of all non-Indigenous dwellings (54%), and almost all Indigenous dwellings (89%). While this limits access to the property market for Indigenous people as a means of improving financial security, it is also symptomatic of their relatively low economic status as well as some cultural focus on communal forms of occupancy and tenure. For non-Indigenous people it is far more likely to reflect their preference for investing in housing markets elsewhere (notably in Perth) using the proceeds of earnings gained in the region.

HOMELESSNESS

One feature of housing tenure that is not captured in these data is homelessness. Additional efforts were made in the 2006 Census to enumerate homeless people although 2006 counts of homeless population

Table 29. Indigenous and non-Indigenous rental housing by landlord type: East Kimberley region^a, 2006

	Real estate agent	State housing	Community housing	Other landlord	Total ^b
Indigenous dwellings					
No.	10	186	582	36	790
Per cent	1.3	23.5	73.7	4.6	100.0
Non-Indigenous dwellings					
No.	73	166	40	415	694
Per cent	10.5	23.9	5.8	59.8	100.0

Notes: a. Excluding the Ngarliwurru-Wuli Indigenous Area.

b. Excludes landlord not stated.

Source: ABS 2006 Census of Population and Housing customised usual residence tables.

are not yet available as census output. Attempts to categorise homeless people have produced three broad groups: the 'absolute homeless' (or primary homeless) including people without conventional accommodation (living on the streets, in deserted buildings, improvised dwellings, in parks, etc.)—what might otherwise be termed 'rooflessness'; 'relative homeless' (or secondary and tertiary homeless) including people staying in boarding houses, people using the Supported Accommodation Assistance Program (SAAP) and other similar emergency accommodation services, or people with no secure accommodation staying temporarily with friends or relatives in private dwellings; and finally the 'marginally housed' (Chamberlain & MacKenzie 2004). While this latter group are not operationally specified in the census, Chamberlain and MacKenzie (2004) include residents of caravan parks in this category.

At the 2001 Census, the number of people classified as homeless according to these definitions was 549 in the Wyndham-East Kimberley Shire and 74 in the Halls Creek Shire. These numbers translated into rates per 10,000 persons of 772 and 203 respectively, with the higher rate in Wyndham-East Kimberley reflecting seasonal pressure on accommodation around census time (August) (Chamberlain & MacKenzie 2004: 51). The rate overall in Western Australia was 64 per 10,000 persons (Chamberlain & MacKenzie 2004: 38). Unfortunately no breakdown by Indigenous status is provided at the small area scale although it is worth noting that in Western Australia as a whole the Indigenous homeless rate was almost three times the non-Indigenous rate (170 per 10,000 persons compared to 60) (Chamberlain & MacKenzie 2004: 55).

Other indications of regional homelessness are available from the Australian Institute of Health and Welfare reporting on SAAP. This national program is Australia's primary response to homelessness and aims to assist people who are homeless, or who are at risk of becoming so, by providing transitional supported accommodation and a range of related support services. Data from this program indicated a total of 1,700

homeless people across the Kimberley in 2005–06 (Anthony 2007: 14). In Western Australia as a whole, Indigenous clients accounted for 41 per cent of the homeless population.

RENTAL HOUSING

According to 2006 Census data, a total of 1,558 dwellings in the East Kimberley were rented, and 51 per cent of these were occupied by Indigenous households. Table 29 shows the distribution of tenancies by landlord type for Indigenous and non-Indigenous dwellings in the region. With the relative share of state-provided rental housing from the Department of Housing and Works more or less even, the key difference is between the Indigenous community housing rental sector and 'other' rental for non-Indigenous tenants which most likely reflects Government Regional Officers Housing. Also of note is the greater use of private rental among non-Indigenous households, although this in itself is relatively small. Once again, this reflects the temporary nature of many non-Indigenous households, but it also reflects relative lower housing affordability among Indigenous households judging by median household incomes shown in Fig. 14.

HOUSING AFFORDABILITY

Housing affordability measures are complex and are not calibrated here using 2006 Census data. However, estimates based on 2001 Census data were prepared for ATSIIC by the National Centre for Social Applications of GIS on the level of affordability stress experienced by Indigenous households in each ATSIIC region (National Centre for Social Applications of GIS 2003). Their definition of affordability stress followed the nationally agreed definition in that households were considered to be subject to affordability stress if they were a rental household, with a gross household income in the bottom 40 per cent of all (national) gross household incomes, and were spending greater than 25 per cent of their household income on rent. Since this calculation is based on census data there are obviously issues that arise due to missing Indigenous households and missing information for households that are identified. It is also the case that the affordability measure derived in this way does not take into account other cost of living issues that vary from place to place.

These issues aside, in 2001, 326 Indigenous rental households in the East Kimberley were found to be in the bottom 40 per cent of all Australian gross household incomes and 44 of these (13%) were paying more than 25 per cent of their gross weekly income in rent. This represents a relatively low level of affordability difficulty compared to that experienced by Indigenous households in many other regions, notably in major cities (National Centre for Social Applications of GIS 2003), and it reflects the overwhelming reliance in the region on community housing.

ENVIRONMENTAL HEALTH INFRASTRUCTURE

The idea that Indigenous community housing and infrastructure should be designed, constructed and maintained to support healthy living practices is now firmly embedded in policy following the pioneering

Table 30. Functionality of dwelling facilities in Halls Creek and Wyndham–East Kimberley ATSI Regions, 2004

Facility	Halls Creek			Wyndham–East Kimberley		
	None	Not working	% Non-functional ^a	None	Not working	% Non-functional ^b
Air conditioning	163	12	41.1	107	14	53.5
Bath and/or shower	17	25	9.9	15	45	27.0
Ceiling fan	49	14	14.9	15	35	22.5
Ceiling insulation	53	8	14.5	62	1	29.0
External sanitary plumbing connection	103	19	28.5	13	25	17.6
Hot water system	46	30	18.1	25	38	29.0
Kitchen sink	21	20	9.7	18	10	12.6
Laundry floor waste outlet	36	21	13.4	34	11	19.9
Laundry trough	31	18	11.4	19	7	11.9
On-site sewerage disposal system	56	13	16.5	33	10	22.5
Toilet bowel	17	22	9.1	14	5	8.5
Toilet cistern	16	26	9.9	15	9	10.8

Notes: a. Based on an average of 425 dwellings surveyed.

b. Based on an average of 219 dwellings surveyed.

Source: Government of Western Australia 2004 EHNS.

work of Pholeros, Rainow and Torzillo (1993) in the Pitjantjatjara lands. A total of nine such practices are identified, in descending order of priority in terms of impact on health outcomes: capacity to wash people; wash clothes and bedding; remove waste safely; improve nutrition; reduce crowding; separate people from animals; reduce dust; control temperature; and reduce trauma. Each of these refer to different aspects of the functionality of dwellings and their related infrastructure. For example, if the focus is on improving nutritional standards and practices, then 'healthy home hardware' refers to the provision of adequate facilities to store, prepare, and cook food. It also extends to water quality and quantity.

The National Indigenous Housing Guide (Commonwealth of Australia 1999) includes a range of detailed design and functionality guidelines to address each of these nine healthy living practices. The key functional area with most guidelines is that involving the supply, usage and removal of water: six of the nine healthy living practices are dependent on these. However, even seemingly obscure health-related housing functions include a wide range of design, maintenance and infrastructural features that require attention (Commonwealth of Australia 1999: 49–57).

Table 31. Identified infrastructure needs: discrete Indigenous communities in the Wunan ATSIC Region, 2004

Identified need	No. of communities	% of communities
Housing (new, repairs, housing for visitors and workers)	45	71.4
Water, power, sewerage (improvements or provision)	34	54.0
Health hardware (ablutions, hot water systems, washing machines)	25	39.7
Access (internal and access roads, vehicles, boats, airstrips, fuel)	19	30.2
Plant	13	20.6
Recreational facilities (sporting grounds, playgrounds)	13	20.6
Telecommunications (phones)	11	17.5
Municipal services (street lighting, rubbish disposal, drainage)	8	12.7
Training (employment and business development)	7	11.1
Meeting areas (administration facilities, general purpose buildings)	5	7.9
Environmental programs (greening, dust suppression)	5	7.9
Fencing (houses, tips, sewerage ponds)	4	6.3
Health services (medical centre, detox centres, Aboriginal Environmental Health Workers, first aid kit)	1	1.6

Source: Government of Western Australia 2004 EHNS.

As with the measurement of housing need, the status of environmental health infrastructure requires a detailed assessment of functionality and adequacy set against agreed normative criteria. The 2006 CHINS includes information on such issues as water supply, sewerage, drainage and solid waste disposal, but this is more in the form of simply noting the existence or otherwise of infrastructure rather than assessing its functionality and adequacy. Likewise, CHINS data do not allow for the proper assessment of activities related to such issues as dust control, animal health and quality of waterways. For example, with regard to dust control, all that is available from the CHINS is the fact that a certain number of permanent dwellings in communities are on sealed roads. While this provides some indication of the likely extent of dust mitigation as an issue, it is far from adequate as an indicator of environmental health needs.

A more direct measure of the functionality of Indigenous dwelling facilities in discrete Indigenous communities in the Ord SSD is available from the Western Australian Government's 2004 EHNS. In this survey, functionality is defined as the presence of working environmental health hardware in dwellings. Table 30 indicates the number of dwellings surveyed in Halls Creek Shire and Wyndham-East Kimberley Shire where these facilities were absent from a dwelling, or were present but not working.

It is clear that the main reason for non-functioning dwellings across the East Kimberley is the physical absence of many environmental health facilities, although for some items (baths, showers, and toilet systems

in Halls Creek and baths and showers, ceiling fans, external sanitary plumbing, and hot water systems in Wyndham–East Kimberley) the main cause is non-working facilities. Compounding this problem, almost half of all dwellings (46%) had no on-site sewerage disposal. Other notable absent dwelling facilities included hot water systems, laundry troughs, laundry waste outlets and air conditioning. Even where dwelling facilities were present, 18 per cent of baths and showers were found to be non-functioning along with seven per cent of ceiling fans. Generally, though, infrastructure items were found to be operational.

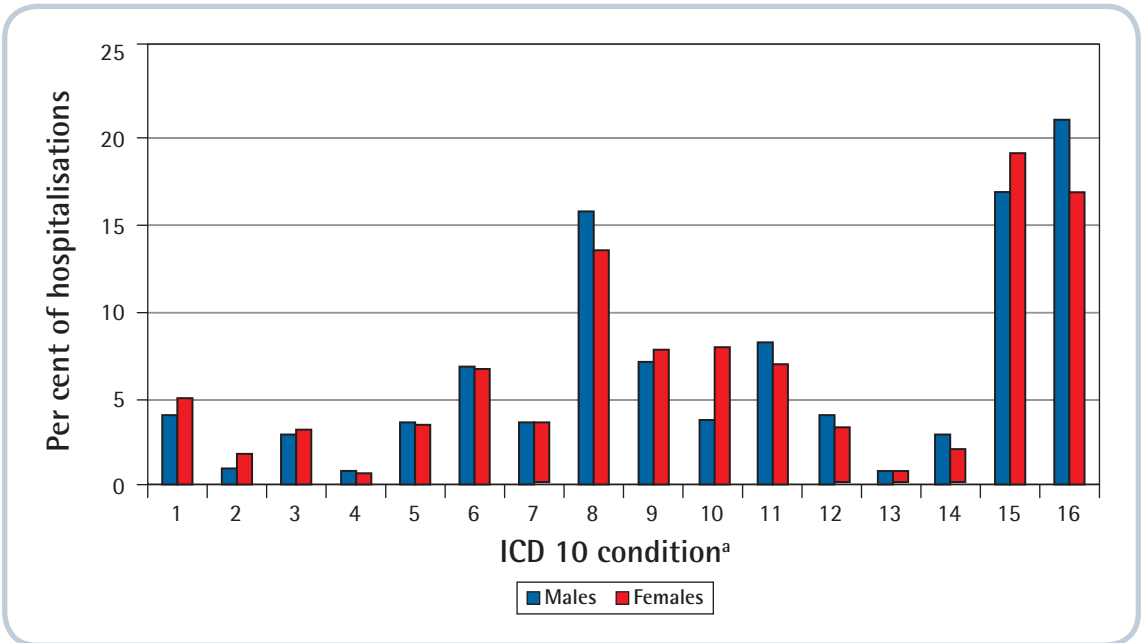
As a summary device, the EHNS provides information on the number of communities reporting particular identified infrastructure needs. Thus, out of the 17 communities surveyed in this region, 71 per cent identified housing as a key need, 54 per cent identified water, power and sewerage, 40 per cent health hardware, 30 per cent transport access and so on (Table 31). Clearly, a relatively large share of communities perceive one or more key infrastructure needs. Of course, it should be noted that these data refer only to dwellings in select discrete Indigenous communities and mostly to housing stock managed by Indigenous housing organisations. No information is available on the quality of other rental accommodation located in the region's towns.

SUPPLY-SIDE ISSUES: HEALTH

A primary barrier to the enhanced participation of Indigenous people in the East Kimberley labour market is poor health status and associated high morbidity and mortality. Presently, in Western Australia, the best estimates of Indigenous life expectancy available from the ABS indicate male life expectancy at birth at 58.5 years and 67.2 years for females (ABS 2007c: 74). These compare with estimates of 79.1 years for all males in Western Australia and 83.8 years for all females. According to the Epidemiology Branch of the Western Australia Department of Health, Indigenous death rates for all leading causes in the Kimberley Aboriginal Health Planning Region were significantly higher than the State rate except for cancer, which was similar. The all-cause death rate among Indigenous adults in the 25–44 age group was five times higher than that of the State population in this age group.

By these facts alone, the chances of full and prolonged Indigenous participation in the workforce and regional economy of the East Kimberley are clearly curtailed. For example, using the ABS experimental life table for Western Australia (combined with South Australia), the chances that a newborn Indigenous male will reach workforce age (15 years) is estimated at 97 per cent. For those who do reach workforce age, 28 per cent will not reach 50 years of age. Statistically, more than half (58%) of Indigenous males who reach age 15 have no chance of surviving to retirement age at 65 years. Thus, out of an average cohort of 100 Indigenous males aged 15, only 42 would still be alive by age 65 (ABS 2007c: 74). Similar, if not lower, survival probabilities, no doubt apply in the East Kimberley region. Equally telling, though, is the morbidity profile that underpins this high mortality. Here we observe the cumulative impact of progressive ill-health that can commence often prior to birth, persist through childhood, and become compounded in adult years. Allied to this are lifestyle factors associated with overcrowded dwellings, risk behaviour, low incomes, and poor nutrition. All

Fig. 21. Unique Indigenous hospital patients by sex and ICD 10 condition: East Kimberley, 2001–06



Note: a. ICD 10 condition categories:

1. Infectious diseases; 2. Neoplasms; 3. Endocrine, nutritional and metabolic disease and immunity disorders; 4. Diseases of the blood and blood-forming organs; 5. Mental disorders; 6. Diseases of the nervous system and sense organs; 7. Diseases of the circulatory system; 8. Diseases of the respiratory system; 9. Diseases of the Digestive system; 10. Diseases of the genitourinary system; 11. Diseases of the skin; 12. Diseases of the musculoskeletal system; 13. Congenital anomalies; 14. Conditions originating in the perinatal period; 15. Symptoms, signs and ill-defined conditions; 16. Injury and poisoning.

Source: Hospital morbidity data system, Department of Health, Western Australia.

this is well documented (ABS and Australian Institute of Health and Welfare 2005; Zubrick et al. 2004) and confirms the importance of social and economic determinants of Indigenous health outcomes.

Information on the health status of Indigenous people is collected as a matter of course in the day-to-day operation of the health care system in Western Australia and data were provided by the Department of Health Hospital Morbidity Data System on unique Indigenous hospital patients for individuals with a usual residence address in the East Kimberley during the period 2001–2006. The percentage distribution of these hospital patients by sex and ICD 10 condition are shown in Fig. 21.

A total of 4,726 individuals were hospitalized over this five-year period, with females accounting for a slight majority (53%). This female share would be higher still (56%) if the 400 admissions for 'complications of pregnancy' were added, but these are excluded here to allow for gender comparison. If we assume that these events are spread evenly across the five year period, then this amounts to around 945 individuals

Table 32. Disease prevalences among OVAHS Indigenous clients: August 2007

	Active cases	Prevalence (per thousand)
End stage renal failure	7	2.3
Major mental illness	7	2.3
Cirrhosis/chronic liver disease	9	3.0
Hepatitis B	10	3.4
Epilepsy	15	5.0
Rheumatic fever	17	5.7
Rheumatic heart disease	20	6.7
Thyroid disease	24	8.0
Pap smear abnormality (high)	25	8.4
Pap smear inconclusive	25	8.4
Chronic kidney disease	32	10.7
Syphilis	36	12.1
Alcohol—unsafe use	51	17.1
Chronic heart disease	56	18.8
Anaemia	59	19.8
Asthma	63	21.1
Respiratory—chronic	64	21.4
Chronic ear disease	77	25.8
Pap smear abnormality (low)	81	27.1
Hyperlipidaemia	85	28.5
Proteinuria	155	51.9
Hypertension	186	62.3
Diabetes	192	64.3

Source: Ferret database, Ord Valley Aboriginal Health Service, Kununurra.

hospitalised each year, which in turn translates into some 15 per cent of the projected Indigenous population (mid-period).

The first point to note in Fig. 21 is the overall lack of difference between male and female causes of hospitalisation, with three conditions standing out as responsible for the majority of cases: injury and poisoning (especially for males); symptoms, signs and ill-defined causes; and diseases of the respiratory system. Aside from these, infectious disease, diseases of the nervous system, the digestive system, the genitourinary system (especially for females), and skin diseases are also notable causes of morbidity.

Further insight into current disease prevalence in the Ord catchment area is provided by the Ord Valley Aboriginal Health Service (OVAHS) Ferret database for regular clients resident in Kununurra and surrounding

outstations as at August 2007. At this time, there were 2,984 Indigenous clients of OVAHS, 53 per cent of whom were female and 1,331 of whom (45%) were under 20 years of age. Table 32 indicates the number of active cases by disease type and their prevalence per thousand population in ranked order of prevalence. These data underline the continuing impact of so-called 'lifestyle' diseases on the current health profile of the regional population with the most prevalent reported conditions including diabetes, high blood pressure, high cholesterol, and kidney disease (all of which are related to dietary factors), alcohol consumption, lack of exercise and smoking.

DISABILITY

One aspect of health status that can have a direct impact on the capacity of individuals to participate in economic activity is physical or mental disability, defined as any continuing condition that restricts everyday activities. Such restriction can be due to an intellectual, cognitive, neurological, sensory or physical impairment or a combination of these; it may also be permanent or episodic in nature. However, with appropriate aids and services the restrictions experienced by many people with a disability may be overcome. Overall, in Western Australia, the most recently available measure of the labour force participation rate of adults with a disability from the 2003 Survey of Disability, Ageing and Carers conducted by the ABS indicates that this is surprisingly high at 56 per cent, although this compares to 80 per cent among those without a disability (ABS 2004). It also indicates that the rate of labour force participation is negatively correlated with the degree of severity of disability from profound/severe to moderate/mild.

Establishing the number of people with a disability in LGAs in Western Australia (and especially in the Kimberley) remains problematic notwithstanding the 2003 Survey. This is because the survey sample excluded sparsely settled areas altogether whilst the sample size in remaining LGAs provides only for reliable estimates at the broad remoteness category level (excluding very remote). One option, then, might be to use administrative data from the Western Australia Disability Services Commission. However, the Commission advises that these report program recipients only and this is known to be a smaller figure than the actual numbers of people with disabilities. It is worth noting that these appear to be conservative estimates

Aside from sample size problems, none of these sources provide separate estimates of the numbers of Indigenous people with a disability. However, one indication of this is available from Centrelink records of disability payments that record the Indigenous status of clients, at least for those who declare it. In the second quarter of 2007, a total of 229 disability support payments were made by Centrelink to Indigenous clients in the East Kimberley (excluding Ngarliwurrurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area) and this was almost 50 per cent higher than the number of payments for Newstart Allowance (Table 9). Of course, this provides no indication of the severity of disability, but if the 2003 ABS survey estimate that 20 per cent of Western Australians with a disability had a profound/severe disability is any guide, then

Table 33. Indigenous males and females with a core activity need for assistance: East Kimberley^a, 2006

	Males	Females	Total
Aged 15 +	68	83	151
Total	78	94	172

Note: a. Excludes the Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area.

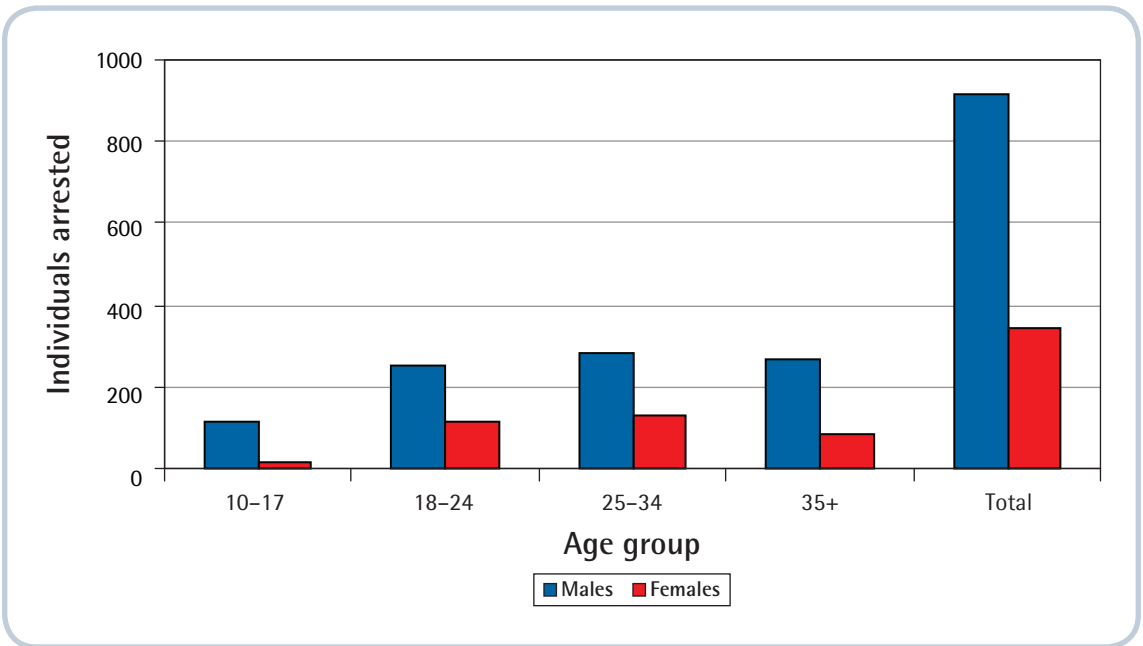
Source: ABS 2006 Census of Population and Housing cat no. 2068.0.

somewhere in the region of 46 Indigenous people in the East Kimberley might fall into this category. In terms of labour force participation, applying the 2003 ABS estimate for Western Australia as a whole for disabled adults suggests that around 105 Indigenous people in the East Kimberley with a disability may be outside of the labour force. One suspects that these estimates would be minimum levels only.

Interestingly, these crude estimates may now be benchmarked against census data since the 2006 Census included questions on disability for the first time and provides for Indigenous status to be recorded. In the Ord SSD, a total of 172 Indigenous persons (4% of the population) were recorded with a core activity need for assistance. This variable has been developed by the ABS to measure the number of people with a profound or severe disability defined as needing help in one of more of the three core activity areas of self-care, mobility and communication because of a disability, long-term health condition (lasting 6 months or more), or old age. Furthermore, a strong negative correlation has been found between the presence of core activity needs for assistance and labour force participation for Indigenous adults in Western Australia (Biddle and Taylor 2008). With this in mind, Table 33 shows the number of males and females with a core activity need for assistance as well as the numbers of working-age. Some caution is required when interpreting these figures since the rate of non-response for this census question was relatively high (8%). The numbers shown are therefore likely to be minimum numbers. They also exclude the Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area. According to these data, the vast majority of persons with a disability (88%) are of working age, although almost half of these (44%) were over 65 years of age. This represented 5.5 per cent of the working-age population in the Ord SSD.

To produce an estimate of the likely true levels of disability, we can apply this rate to a projection of the working-age population for the Ord SSD (Taylor 2004) plus the 2006 Census count of adults for the Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area. This produces a figure of 273 Indigenous adults in the East Kimberley region with a core activity need for assistance.

Fig. 22. Indigenous persons arrested by age and sex: East Kimberley region^a, 2004



Note: a. Excluding Ngarliwurru-Wuli and Wardaman outstations/Timber Creek Indigenous Area.

Source: Government of Western Australia 2004a,b.

SUPPLY-SIDE ISSUES: CRIMINAL JUSTICE

An important public policy question in the East Kimberley region is the degree to which convictions and interaction with police, courts and prisons reduce the chances of local Indigenous people participating successfully in the regional economy. Criminologists have long been interested in the relationship between unemployment and crime, though with a focus particularly on examining the effect of unemployment on criminal behaviour (Chapman et al. 2002; Weatherburn 2002). In contrast, economists interested in the Indigenous labour market have considered the effect of a criminal conviction on an individual's employment prospects, with Hunter and Borland (1999) and Hunter et al. (2006) finding a strong negative impact of arrest. Certainly, for many industries prevalent in the region (notably mining and tourism), prior conviction and any on-going substance misuse can be highly deleterious to say nothing of the overall impact of periodic detention on removing people from labour market activity.

ARRESTS BY AGE

Current (2007) data on unique offenders arrested in the East Kimberley were not forthcoming. However, the Office of Crime Prevention in Perth does publish community safety and crime prevention statistics for each Shire in Western Australia and the latest available are for 2004. In that year, a total of 1,390 unique offenders over the age of 10 years were arrested in the two East Kimberley Shires and of these 1,257 were identified as Indigenous persons (Government of Western Australia 2004a,b), although no indication of usual residence is provided and so arrest rates for each Shire cannot be calculated.

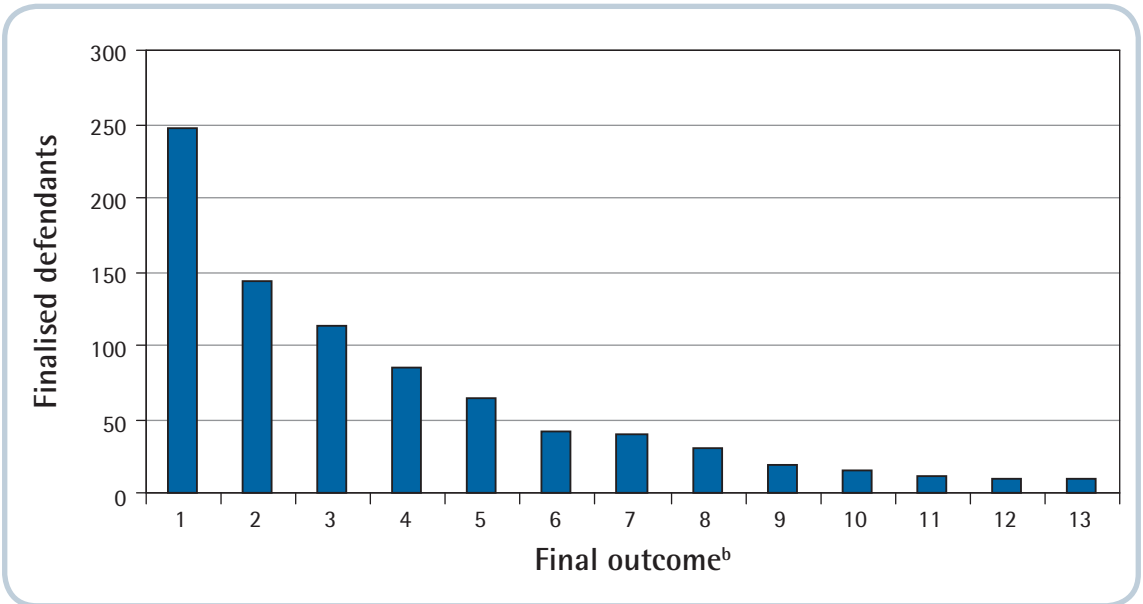
According to these data, the vast majority of Indigenous persons arrested (73%) were male. As for the distribution of arrests by age and sex, this is shown in Fig. 22. Numerically, there are far more males arrested than females. While the number of arrests for both is highest (just) in the 25–34 age group, if it were possible to calculate rates of arrest these would be highest in the 18–24 age group, given that this comprises a smaller cohort but shows similar levels of arrest. Likewise, the number of arrests of persons aged over 35 are also relatively high (especially for males) but as a rate this would be lowest given the greater size of the cohort compared to all other age groups.

It is also interesting to note that of all those arrested in 2004 (including 133 non-Indigenous offenders) only 30 per cent were arrested for the first time, suggesting a high recidivist rate. The principle offence categories for which individuals were arrested include in descending order of occurrence: offences against good order (408 or 29%); driving and traffic offences (400 or 28%); offence against the person (mostly assaults) (375 or 27%); and burglary (75 or 5%). As for actual numbers, as many as 533 Indigenous males in the prime working age group of 18–34 were arrested and about half as many Indigenous females. If these figures are even close to being true rates (i.e. actually drawn from the locally resident population) then they are very substantial when set against workforce participation at equivalent ages. From this perspective they raise major questions about the possible impact of interaction with the criminal justice system and its potential to impose constraints on participation, either through the issuing of a criminal record, or through actual detention.

COURT CONVICTIONS

Data were obtained from the Western Australian Department of the Attorney-General regarding the number of adjudicated cases from the Children's Courts and Magistrate Courts in the East Kimberley for the years 2003 to 2007 inclusive. A major drawback for the analysis of these data is the lack of a process in court reporting of ethnic self-identification. It is not mandatory that accused provide their Indigenous status and courts rely on police entering this through an e-brief lodgment application. Consequently, there are defendants for whom Indigenous status is unknown either because this was not entered or the individual declined to answer. As a result, Indigenous status was unknown for as many as 1,278 finalised defendants in East Kimberley Magistrates Courts between 2003 and 2007 (excluding any court convictions in the Northern

Fig. 23. Average annual number of finalised court outcomes for Indigenous defendants: East Kimberley Children's Courts^a, 2004–07



Notes: a. Includes courts at Billiluna, Halls Creek, Kalumburu, Kununurra, Lakeside, Oombulgerri, Turkey Creek and Wyndham.

b. Final outcome categories:

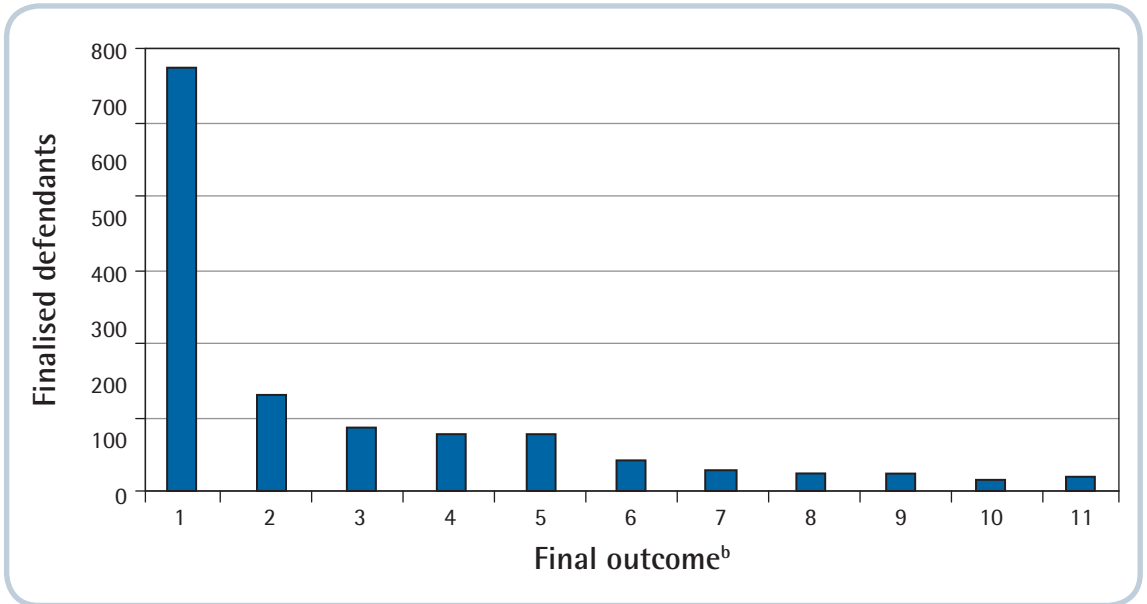
1. Youth Community Based Order; 2. Referred to Juvenile Justice Team; 3. Fine; 4. Child Good Behaviour Bond; 5. Intensive Youth Supervision Order; 6. No Punishment; 7. Conditional Release Order; 8. Dismissed outright; 9. Detention; 10. Matter Withdrawn; 11. Adult Conditional Release Order; 12. Community Based Order; 13. Work and Development Order.

Source: Department of the Attorney-General, Perth.

Territory). This accounted for almost nine per cent of all such cases. The equivalent figures for the Children's Courts were 68 and seven per cent. These proportions appear to be lower than those recorded for Western Australia as a whole as these were 22 per cent for the lower courts and 13 per cent for the Children's Court in 2003 (Fernandez et al. 2003: 75, 107).

As for the findings of court proceedings in the form of penalties (sentences), these can be grouped into four broad categories: custodial, non-custodial, fines and dismissals. According to the ABS sentence type classification (ABS 2003: 71), custodial orders involve custody in a correctional institution as life imprisonment, imprisonment with a determined term, or periodic detention. They also include custody in the community under an intensive correction order or home detention. Suspended sentences also fall under custodial orders. Non-custodial orders include a variety of community supervision or work orders and community service orders, as well as probation and treatment orders. Other non-custodial orders include good behaviour bonds and recognisance orders, while monetary orders basically refer to fines or recompense to victims as well as licence disqualification/suspension/amendment and forfeiture of property.

Fig. 24. Average annual number of finalised court outcomes for Indigenous defendants: East Kimberley Magistrates Courts^a, 2004–07



Notes: a. Includes courts at Billiluna, Halls Creek, Kalumburu, Kununurra, Lakeside, Oombulgerri, Turkey Creek and Wyndham.
 b. Final outcome categories:
 1. Fine; 2. Adult Conditional Release Order; 3. Imprisonment; 4. Work and Development Order; 5. Suspended Imprisonment Order; 6. Community Based Order; 7. Dismissed Outright; 8. No Punishment; 9. Remanded; 10. Warrant of Commitment to another Court; 11. Other outcomes.

Source: Department of the Attorney-General, Perth.

As non-custodial sentences are the most common it is worth defining some further aspects of these. For example, Community Based Orders allow the court to order an offender to be managed by a Community Corrections Officer for the purposes of any one or more requirements of supervision, community service of between 40 and 120 hours, and/or programs aimed at the offender's behaviour. Intensive Supervision Orders are similar but provide for longer and more stringent supervision including curfews. Work and Development Orders are the last option prior to imprisonment for people who are in default of a fine. The order requires that the offender perform a specified number of hours of community work and personal development.

In the East Kimberley, as in all remote Indigenous communities in Western Australia, these non-custodial orders are carried out under the Indigenous Community Supervision Agreement, which offers communities a key role in the decision making about offender management. As Parriman and Daley (1999) point out, communities decide themselves whether to accept an offender under supervision. They determine who is the most appropriate person to administer the supervision order, and they are largely responsible for

determining the supervision regime. One consequence has been a greater tendency on the part of the courts to make greater use of community-based sentencing (Parriman and Daley 1999: 3), and this is reflected in the sentencing data.

Fig. 23 shows the average annual distribution of penalties awarded to finalised defendants over the period 2003 to 2007 by the Children's Courts according to the type of penalty awarded. By far the largest number of convictions in the Children's Courts (57%) attracted a Youth Community-based Order followed by a referral to a Juvenile Justice Team. A monetary fine was awarded in around 13 per cent of cases. As can be seen, the number of custodial orders served is relatively small.

As for penalties awarded in the Magistrates' Courts (Fig. 24), by far the majority of these were monetary fines (and annual average of 760 or 54% of all penalties). Various community based orders were the next highest category (an annual average of around 325 or 22% of penalties) while custodial sentences involving imprisonment, a suspended imprisonment order, and remand accounted for 17% of cases (an annual average of 233), with community based orders far less prevalent.

Working out the impact of these court penalties on the Indigenous population of the East Kimberley is no easy task given the lack of self-identified Indigenous status in court reporting and the lack of data made available on actual residents of the region in custody at any one time. However, if we take from the Magistrates' Courts data the annual average of 325 community based orders and 233 custodial penalties as a rough guide, then it is significant that this amounts to around 15 per cent of the estimated Indigenous resident population of the East Kimberley aged 18 and over in 2006, as this number might be compulsorily withdrawn from the labour market at any one time. Of course, this is simply the stock, whereas as the flow of individuals through custodial/non-custodial sentencing over a period of time would be much higher. Clearly, the impact on simple availability to participate in the regional workforce is substantially hampered by this enforced withdrawal of labour, to say nothing of the lingering negative effects of sentencing, although it is true to say we also know little about any positive impacts of rehabilitation activity. Once again, it is useful to place these estimates against the likely breakdown of the working age population by labour force status. On this reckoning, more than one-quarter (27%) of those not in the labour force might be under custodial and non-custodial sentences, a proportion that is likely to be much higher among males.

CONCLUSION: ORD 2, MG CORPORATION AND REGIONAL DEVELOPMENT

The above analysis details the relative social and economic status of the Indigenous population in the East Kimberley region at the commencement of a major economic development project. In the immediate context, it provides an essential quantum to discussions of need, aspirations, and regional development capacities for Indigenous, corporate, and government stakeholders. In future contexts, it provides a benchmark against which the success or otherwise of intended and unforeseen impacts may be measured. The primary dynamic driving likely future outcomes is sustained Indigenous population growth against a background of low Indigenous economic status and limited human capital for mainstream economic participation. Despite

the labour demand that is likely to arise both directly and indirectly as a consequence of the Ord scheme expansion, the capacity of local Indigenous people to benefit is presently constrained.

As noted, a key feature of the Ord Final Agreement was the establishment of the MG Corporation, charged with developing strategic economic development priorities and opportunities based on financial and other benefits flowing from the Agreement. As part of this, the OES was established to address the adverse social and economic impacts of Ord Stage 1 and the associated development of the town of Kununurra on the lives of Miriuwung and Gajerrong people. Using genealogical information it has been estimated that these particular commitments refer to around one-fifth of the estimated 6,500 Indigenous people in the wider East Kimberley region. On the basis of regional projections, and if this population share remains constant, we can reasonably expect the population of Miriuwung and Gajerrong to rise from the current level of around 1,100 to approximately 1,600 by 2021. This expansion is significant in terms of the life of the Agreement which is set to expire in 2016.

By these strategic, administrative and corporate arrangements, and against this background of population growth, the fortunes of both the MG Corporation, its membership, and the State of Western Australia, are bound up in the Business Case for Ord Stage 2. Simply put, with the prospect of enhanced economic opportunity due to the expansion of irrigated agriculture and allied activities the MG Corporation is positioned to deliver on certain of its constituency's needs. For its part, the OES is in place to help facilitate workforce participation with potential benefits flowing to both Miriuwung and Gajerrong people and the State. Clearly, if the Ord 2 expansion had not proceeded then the effective role of the MG Corporation in economic development would have been substantially curtailed while the OES would have become more of a rear-guard attempt by government to cope with the escalating social and economic costs of continued Indigenous marginalisation in the region.

This essentially opportunity cost argument has been made before (Taylor & Scambary 2005; Taylor & Stanley 2005). It focuses attention on the fact that the Business Case underpinning the expansion of the Ord scheme includes the increased fiscal cost to the State of not proceeding due to rising expenditures incurred in welfare provision and in dealing with social pathologies. An important finding of national and local-level analyses in this regard is that the continuation of low Indigenous labour force status represents a major drain on the Australian economy in terms of foregone production and tax revenue, the fiscal costs of welfare provision, remedial costs of social pathology, and social costs of exclusion (Access Economics 2008; Hunter & Taylor 2002; Taylor & Stanley 2005). While these costs are not estimated here for the Ord scheme catchment region, the allied deficits that have been revealed in labour force status, educational achievement, housing, and health among Indigenous people in the region, and the degree to which interaction with the police, and subsequently with the courts and various custodial institutions, has become so pervasive, indicate that such costs are no doubt substantial. In the absence of enhanced regional economic multipliers, these costs would have escalated further against the background of a growing and intractably marginalised Indigenous population.

All of this assumes, of course, that economic and social benefits from the Ord 2 expansion do eventuate for Indigenous residents of the region. Much now depends on the work of the MG Corporation and the OES to achieve this and the primary focus here will be on matching labour supply to expanding labour demand with an emphasis on ensuring work-readiness and building social infrastructure. At the same time, Indigenous people in the region are insistent that economic development should occur in ways that protect environmental and cultural values with a view to the triple bottom line. This introduces necessary complexity to the regional matrix of costs and benefits and points to a key central role for Indigenous groups in the establishment of expectations and the definition and measurement of outcomes (Taylor 2008). A related issue for statistical profiling that remains unresolved across Australia, and not just in the East Kimberley, is the difficulty of matching or generating statistical information for specific country groups that have inherent and proprietary rights over particular lands and waters (Sutton 2003).

In 1996, the ABS developed the AIGC in recognition of the quite different spatial distribution of the Indigenous population. This was a substantial innovation as it allows for some separation of key population categories such as outstations from parent communities, Aboriginal lease areas in towns, and other discrete clusterings. While this was an attempt to get up close as it were, to reflect more accurately the places where Indigenous people live, in some ways it missed the point altogether since the primary organizing principles of Indigenous social formation are both spatial *and socio-relational* and these invariably do not coincide to produce discretely bounded social groupings that mesh with units of the AIGC. In the present study, while elements of the AIGC were combined to approximate Indigenous populations implicated by the Ord development, no formal statistical geography was found that adequately captured the demography of Miriuwung and Gajerrong people—hence the use of genealogical data to acquire at least some sense of this. The simple fact is, the Indigenous cultural map is vastly different to that imposed by the AIGC (Arthur and Morphy 2005: 81) and consequently it is difficult to provide for a demography of Indigenous polities that have rights and interests in particular places. This is an issue of boundary mismatch that has been well rehearsed in Australia in relation to land rights (Morphy 1999; Sutton 1995, 2003) but its implications in terms of regional planning have yet to be understood.

Almost one fifth of Australia is now under some form of legally-recognised Indigenous land tenure and this is set to increase via native title determinations and land purchases. All across the continent there is a growing discrepancy between official statistical output frameworks and the actual needs of Indigenous land-holding groups for ethnographically-informed demographies that are suited to the management of the Indigenous estate via local governance arrangements, resource and land use agreements, social and environmental impact assessments and so on. There is no quick fix here, it requires the development of 'demographies in situ' (Kreager 1982) with far greater input from local Indigenous populations in the identification of appropriate statistical categories and a consideration of how relevant data might be acquired to populate these.

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