

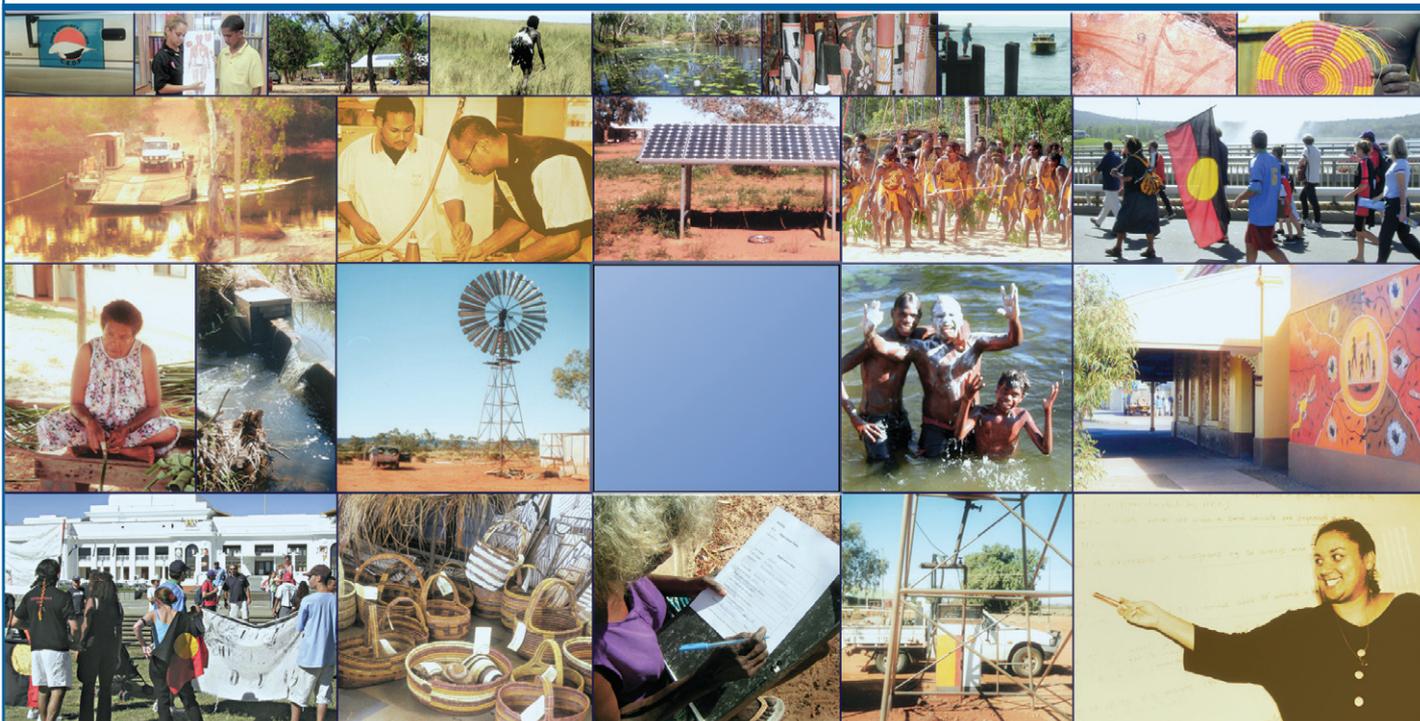
CENTRE FOR ABORIGINAL ECONOMIC
POLICY RESEARCH



Indigenous Temporary Mobility: An Analysis of the 2006 Census Snapshot

N. Biddle and S. Prout

CAEPR WORKING PAPER No. 55/2009



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June 2009



Ministerial Council for Aboriginal
and Torres Strait Islander Affairs



Indigenous temporary mobility: An analysis of the 2006 Census snapshot

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ABSTRACT

Local area population counts and estimates are crucial inputs into policy planning and processes. However, population mobility in general, as well as large numbers of visitors to particular areas, place additional demands on resources and those providing essential services. The literature identifies a pressing need for standardised quantitative measures of the volume, frequency and flows of Indigenous temporary mobility and comparable spatial scales. In this paper we present an analysis of census data as it relates to Indigenous temporary mobility and analyse the spatial and demographic complexities that underwrite them. While the census remains the only consistent and nationally comprehensive data set on Indigenous temporary mobility that provides important insights, the overall findings from this analysis suggest that it remains a relatively blunt instrument in the task of identifying the full range of factors that drive and shape Indigenous temporary movement. We conclude that researchers, policy makers and Indigenous populations must seek and develop additional data sources from which the drivers and dynamics of Indigenous temporary mobility and residency patterns might be identified.

Keywords: Indigenous; temporary mobility; census; geographic analysis.

CAEPR INDIGENOUS POPULATION PROJECT

This project has its genesis in a CAEPR report commissioned by the Ministerial Council for Aboriginal and Torres Strait Islander Affairs (MCATSIA) in 2005. The aim of the paper (published as CAEPR Discussion Paper No. 283) was to synthesise findings from a wide variety of regional and community-based demographic studies. What emerged was the identification of demographic 'hot spots'—particular Indigenous population dynamics in particular regions that give rise to issues of public policy concern. These trends spatially align with specific categories of place that transcend State and Territory boundaries. The 'hot spots' coalesce around several structural settings including city suburbs, regional towns, town camps, remote Indigenous towns, and outstations, as opposed to the more formal regionalised or jurisdictional spatial configurations that have tended to guide and inform Indigenous policy development.

Recognising that the structural circumstances facing Indigenous populations are locationally dispersed in this way, MCATSIA has established an enhanced research capacity at CAEPR to further explore the dynamics and regional geography of Indigenous population and socioeconomic change.

This research activity commenced in late 2007 and is constructed around four discrete yet overlapping projects:

- a detailed regional analysis of relative and absolute change in Indigenous social indicators
- an assessment of social and spatial mobility among Indigenous metropolitan populations
- case-study analyses of multiple disadvantage in select city neighbourhoods and regional centres
- the development of conceptual and methodological approaches to the measurement of temporary short-term mobility.

Working Papers related to these projects are co-badged with MCATSIA and released as part of the CAEPR Working Paper Series. It should be noted that the views expressed in these publications are those of the researcher/s and do not necessarily represent the views of MCATSIA as a whole, or the views of individual jurisdictions.

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EXECUTIVE SUMMARY

1. Local area population counts and estimates are crucial inputs into policy planning and processes. However, population mobility in general as well as large numbers of visitors to particular areas place additional demands on resources and those providing essential services.
2. The literature identifies a pressing need for standardised quantitative measures of the volume, frequency and flows of Indigenous temporary mobility and comparable spatial scales. Such measures would provide a valuable contextual framework for more nuanced, smaller-scale analyses, as a means to develop more complete and informed mainstream understandings of these population dynamics. These measures are also arguably essential to the tasks of justly and efficiently targeting funding, programs and services in order to close the socioeconomic gaps between Indigenous and non-Indigenous populations.
3. This paper builds on work by Taylor (1998) to present an analysis of census data as it relates to Indigenous temporary mobility. It examines the robustness of census measures of temporary mobility and analyses the spatial and demographic complexities that underwrite them.
4. The 2006 Census of Population and Housing indicated that 6.8 per cent of the Indigenous population were enumerated away from their place of usual residence. While relatively low, this figure was over 50 per cent higher than that of the non-Indigenous population (4.3%).
5. This measure of temporary mobility peaks in young adulthood for both Indigenous males and females. For females, the rate then declines quite substantially such that by the age of 30, only around 6 per cent of the population were temporarily absent. For males, on the other hand, the rate stays at very high levels throughout a person's 20s and only declines slightly throughout their 30s and 40s.
6. Underneath these national averages, there was substantial diversity by geography. According to census data, Indigenous Australians in urban or regional Australia had similar or slightly higher levels of temporary mobility than the non-Indigenous population. However, for remote Australia it was the non-Indigenous population that was identified as being highly mobile.
7. For those who were temporarily mobile, the distance between one's area of enumeration and area of usual residence was greater for the non-Indigenous compared to the Indigenous population.
8. Overall, findings from this analysis suggest that the census remains a relatively blunt instrument in the task of identifying the full range of factors that drive and shape Indigenous temporary movement. This was particularly the case for net temporary flows into and out of an area, with very little difference across Australia by Indigenous population share, standard categories of remoteness, location type, or State/Territory.
9. We conclude that researchers, policy makers and Indigenous populations must seek and develop additional data sources from which the drivers and dynamics of Indigenous temporary mobility and residency patterns might be rendered more 'legible to the state' (Morphy 2007b).

INTRODUCTION

Population counts and estimates at a local level are crucial inputs for policy planning and processes. In a parliamentary democracy such as Australia, they play a key role in determining electoral boundaries. When combined with information on age structure, they allow governments to identify the mix of services that are required in a particular area. Furthermore, when combined with socioeconomic data they inform needs-based assessments and evaluations of past government policies.

In Australia, the Census of Population and Housing is the primary source of data for determining the size and composition of the population at a local level. Traditionally, population estimates have been constructed based on the address respondents identify as being their place of 'usual residence'. However, we also know from the census that approximately one in 20 respondents—or over one million Australians—are away from their place of usual residence on the night of the census. Furthermore, drawing on alternative data sources, Charles-Edwards, Bell and Brown (2008) demonstrate that a lower proportion of people are temporarily away from their place of usual residence in August (when the census is carried out) than at other times of the year. For example, in January (and to a lesser extent the Easter period), a much higher proportion of the population are likely to be away from the area in which they usually live.

While it makes sense to provide schools, roads, hospitals and other services where people live, visitors to an area also place significant demands on local infrastructure. Recognition of these pressures has led to the development and analysis of the concept of service population (Cook 1996). A service population includes any and all individuals who may be expected to access a particular service. The service population is therefore larger than the resident population of a particular locale (Prout 2008a). It is a particularly useful concept in relation to highly mobile populations where the distinction between 'visitor' and 'resident' can be problematic.

Empirical analysis of temporary mobility in Australia is reliant on three main types of data: the census (Bell & Brown 2006; Bell & Ward 1998; Taylor 1998); the National Visitor Survey or other national statistical collections (Charles-Edwards, Bell & Brown 2008); and small-scale community surveys or case studies (Foster et al. 2005; Palmer & Brady 1988; Smith 2000; Warchivker, Tjapangati & Wakerman 2000).

Analysis of temporary mobility using the census involves comparing the snapshot picture of where people happened to be on the night of the census (their place of enumeration) with where they identify as their place of usual residence. As Bell (2004) notes, such analyses cannot capture the duration, frequency, periodicity or seasonality of temporary movements. However, to varying degrees, they are able to capture the intensity, distance, direction and spatial patterns of such movements (Bell 2004). Census data ultimately constitutes the only national data source that allows for consistent and comparable measures of temporary mobility for small areas and/or small populations, albeit in snapshot form.

Much of the existing literature regarding census-based analyses of temporary mobility is concerned with the non-Indigenous population. However, as Taylor (1998) noted, the census identifies relatively high rates of temporary mobility amongst the Indigenous population. While there are a number of data quality issues from the census that are particularly important when considering Indigenous temporary mobility (as discussed later in this paper), an eclectic, largely ethnographic literature, describes frequent short-term movements amongst many local Indigenous populations (see for example Beckett 1988; Birdsall 1988; Hamilton 1987; Peterson 2004; Smith 2004; Young & Doohan 1989). According to Prout (2008a) a range of considerations shape the temporary movements of Indigenous Australians including: familial

circumstances and obligations, ceremonial practices and duties, seasonal variations, the need and desire to access mainstream services and opportunities, and interaction with the mainstream legal system. From a policy perspective, these population movements have several specific implications, including:

- adapting services to the needs of changing population compositions;
- providing continuity of service delivery;
- managing the effects of large population influxes and exoduses on social and physical infrastructure in source and destination locations; and
- redressing the ongoing alienation of mobile Indigenous people within the mainstream service sector (Prout 2008a: 2).

Despite these significant policy implications, few analyses have provided standardised quantitative data about the volume, frequency and flows of these temporary movements at comparable spatial scales. In the only major study to date, Taylor (1998) demonstrated distinct regional patterns to Indigenous temporary mobility. He found that regional areas were net recipients of temporary residents, and rural or remote areas experienced net absenteeism. However, as Taylor's study is based on data from the 1991 Census, the conclusions from it may now be somewhat dated. Furthermore, he used a broad regional geography that masked a substantial degree of intra-regional mobility, and his analysis did not extend to the demographic characteristics of Indigenous temporary movers or the distances across which they travelled. This paper follows the standardising work of Bell (2004) to update and build on Taylor's work.

The 2006 Census of Population and Housing indicated that 6.8 per cent of the Indigenous population were enumerated away from their place of usual residence. While relatively low, this figure was over 50 per cent higher than that of the non-Indigenous population (4.3%). In broad national terms, this point-in-time snapshot seems to support the stereotype that Indigenous Australians are highly mobile. However, what lies beneath the overarching census snapshot of high mobility amongst the Indigenous population is a more illuminating, and ultimately more compelling story of complexity and diversity.

By applying a regression approach to determine geographic or socio-demographic variation in *rates* of temporary mobility as measured by the census, useful insights emerge.¹ Firstly, we consider the volume and composition of measured temporary mobility: on average how many people does the census say were away from their place of usual residence at the time of enumeration; were these rates of movement higher or lower in different parts of Australia; and did they differ across demographic or socio-economic characteristics of the population? Secondly, we consider the spatial scale of measured temporary mobility trajectories by examining how far away on average people were from their place of usual residence. Finally, we consider the impact of temporary movers on population counts of the source and destination locations.

Throughout the analysis, we compare the large-scale statistical picture to that derived from a series of localised, often qualitative, analyses of Indigenous temporary mobility to compare available census measures of temporary mobility with the existing body of evidence regarding these population dynamics. Doing so allows us to conclude with an assessment of the capacity of census data to provide accurate and relevant measures of Indigenous temporary mobility practices and to identify alternative, complementary data sources.

INDIGENOUS TEMPORARY MOBILITY: THE GEOGRAPHIC DIMENSION

Within mainstream society, there remains a romantic notion of 'authentic' Aboriginal people as those living 'traditional' nomadic lifestyles in the outback wilderness (Menage 1998; Prout & Howitt forthcoming). Conversely, urban-based Indigenous populations are often assumed to have abandoned or lost their customary identities and practices, and assimilated into the mainstream, 'settled' society (Langton 1981; Prout 2009b; Rowse 2000). These assumptions are perhaps fuelled by a bias in the existing literature. Study of Indigenous temporary mobility has largely been confined to regional and remote contexts (see for example Hamilton 1987; Memmott, Long & Thompson 2006; Peterson 2000; Smith 2004; Young & Doohan 1989). To date, a lack of focus on Indigenous mobility in 'settled Australia' (see Rowley 1971 for geographical delimiters), and a paucity of research that employs robust and nationally comparable measures of Indigenous temporary movements, has made it impossible to validate or challenge these assumptions.

A geographical exploration of the 2006 Census snapshot of temporary movers shows that while most of the variation in measured temporary mobility for the non-Indigenous population is explained by geography, this is not the case for the Indigenous population. Table 1 presents three models that test the association between measured temporary mobility and various aspects of particular geographies. For both models the unit of analysis is Indigenous Areas (IAREs) the middle level of the Australian Indigenous Geographical Classification (AIGC). There were 531 IAREs at the time of the 2006 Census that provided useful data. They ranged in geographical size from 0.08 square kilometres in Kalumburu (Western Australia), to 530,577 square kilometres in Port Augusta Region Balance (South Australia). In terms of population size, they ranged from 62 enumerated Indigenous usual residents in Wyndham-East Kimberley (Western Australia), to 5,549 in the Gold Coast (Queensland).

The dependent variable or main variable of interest in the models presented below is the percentage of the population who were away from their place of usual residence at the time of enumeration. A separate set of estimations is carried out for the Indigenous and the non-Indigenous population.

The first model considers variation according to the percentage of the population in the IARE who identify as being Indigenous. We use a linear and quadratic (squared) term because a visual analysis of the data suggested a non-linear relationship between the dependent variable and the Indigenous share of the area. In the second model we use the standard five-category remoteness classification. Here, each IARE is classified as being part of either a major city, inner regional, outer regional, remote or very remote Australia.² The first of these categories is set as the base case from which we test whether each of the remaining categories had, on average, a significantly different percentage of the population away from their place of enumeration.

The final model presented in Table 1 uses a classification of IAREs first introduced in Taylor and Biddle (2008). This 'location type' classification is based in part on the standard remoteness classification, but takes into account urban centre size and Indigenous share of the population. Within non-remote Australia, 'city areas' (set as the base case) are urban centres with a total population count of 100,000 people or more on census night. This includes capital cities as well as places like Wollongong and Newcastle in New South Wales and the Gold Coast and Townsville in Queensland.

'Large regional towns' are those with populations between 10,000 and 100,000 people. Most of these towns are in New South Wales, Queensland and Victoria. However the category also includes places like Darwin, Launceston and Kalgoorlie. 'Small regional towns' are those with a population of between 200 and 10,000 people. These areas make up a large part of inland New South Wales and Queensland, as well as the areas surrounding Perth and Darwin. 'Regional rural areas' have populations under 200 people.

IARE:
Indigenous Area

AIGC:
Australian
Indigenous
Geographical
Classification

Table 1. Factors associated with the percentage of the population away from their place of usual residence

Characteristics of IARE	Indigenous			Non-Indigenous		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Percentage of population Indigenous (linear)	0.248			1.400		
Percentage of population Indigenous (squared)	-0.003			-0.012		
Inner regional area		n.s.			n.s.	
Outer regional area		1.283			4.365	
Remote area		2.323			19.017	
Very remote area		1.801			27.850	
Large regional towns			n.s.			2.614*
Small regional towns and localities			n.s.			3.286
Regional rural areas			n.s.			n.s.
Remote towns			2.380			18.252
Indigenous towns			-1.387*			16.168
Town camps			6.056			53.175
Remote dispersed settlements			3.712			37.572
Victoria			n.s.			n.s.
Queensland			0.979*			2.675*
South Australia			1.708*			n.s.
Western Australia			2.717			5.336
Tasmania			n.s.			n.s.
Northern Territory			1.630			n.s.
Australian Capital Territory			n.s.			n.s.
Constant	5.982	6.456	5.717	n.s.	3.336	2.281*
Adjusted R-Squared	0.0906	0.0371	0.1279	0.4347	0.4287	0.5310

Notes: The base case for Model 2 is 'major cities'; the base case for Model 3 is 'city areas' in New South Wales.
n.s. = variables that are not significant at the 10% level of significance.
* = variables that are significant at the 5% level of significance.

Source: Authors' calculations using the ABS Census of Population and Housing 2006.

The next four location types are all in remote Australia. 'Remote towns' are bounded localities with less than half the population Indigenous. This makes up most of western New South Wales and Queensland and a large part of Western Australia. They also include Broome, Alice Springs, Tennant Creek and Katherine. 'Indigenous towns' are also bounded localities but have a population that is more than 50 per cent Indigenous. Many of these are in the Northern Territory and on Cape York Peninsula. 'Town camps' are a special category of IAREs coded by the Australian Bureau of Statistics (ABS). They are a non-exhaustive list and only include Alice Springs, Katherine and Tennant Creek town camps. The final location type is 'remote dispersed settlements'. They make up most of the Australian land mass and are in essence areas in remote Australia where most people do not live in a town of any reasonable size. A lot of these areas would otherwise be classed as outstations.

Model 3 also includes a variable for State/Territory in order to test whether there is variation by jurisdiction after controlling for location type. The base case is New South Wales.

ABS:

Australian Bureau
of Statistics

For both Indigenous and non-Indigenous Australians, living in an area that has a relatively large Indigenous population is associated with a higher probability of being away from one's place of usual residence at the time of census enumeration. However this is only true up to a certain point, with a positive coefficient for the linear term and a negative coefficient for the quadratic. That is, the relationship between Indigenous share and this measure of temporary mobility starts off positive but then reaches a peak beyond which an area having a higher percentage of Indigenous Australians is associated with a lower percentage of the population being away from their place of usual residence at the time of enumeration.

According to Model 1, the percentage of the Indigenous population away from their place of usual residence at census enumeration is estimated to be at its highest when 47 per cent of the population is Indigenous. This corresponds to an estimated value of 17.6 per cent away from home. For the non-Indigenous population on the other hand, the maximum percentage of people away from their place of usual residence was estimated to be 81 per cent, which corresponds to an Indigenous share in the area of 57.3 per cent.

In effect then, in overall comparison with the non-Indigenous population, a greater proportion of the Indigenous population was estimated to be away from their place of usual residence at census enumeration. By comparing the modelling results for the Indigenous and non-Indigenous populations, it is estimated that in IAREs with 4.7 per cent or higher Indigenous population share, the reverse was true. Of the 531 IAREs for which data was available, 265 (or almost exactly half) were beyond this threshold. Based on this measure therefore, around 208,000 Indigenous Australians or 45.9 per cent of the total usual resident population were estimated to live in an area in which the non-Indigenous population was more likely to be away from their place of usual residence.

For both the Indigenous and non-Indigenous population, major cities and inner regional areas were estimated to have the lowest percentage of the population away from their place of usual residence at census enumeration. Outside of inner regional areas and major cities, however, there are major differences between Indigenous and non-Indigenous Australians in terms of magnitude of the coefficients. For the Indigenous population, the percentages of temporary movers in outer regional, remote and very remote areas are only estimated to be slightly higher than in the more populous parts of Australia, and the percentages do not rise steadily with increasing remoteness.

By contrast to the above, these conventional remoteness classifications appear to be more directly related to non-Indigenous rates of measured temporary absence from usual residence. Of the non-Indigenous people living in very remote Australia, 31.2 per cent were enumerated away from their place of usual residence. The percentages decrease in concert with decreasing remoteness, down to city areas where only 3.3 per cent of the non-Indigenous population was temporarily away from their usual residence.

In the third model, only remote towns, town camps and remote dispersed settlements were estimated to be significantly different to city areas in terms of the percentages of people enumerated away from their place of usual residence. And again, the non-Indigenous population estimates revealed the greatest differences. The proportions of non-Indigenous movers in remote towns, town camps and remote dispersed settlements, were all at least 20 per cent higher than in city areas. After controlling for location type, there was also still significant variation by State/Territory for both populations. In particular, Western Australia had a significantly higher percentage away from usual residence than the other jurisdictions.

These models suggest that the Indigenous population is more likely to be away from their place of usual residence than the non-Indigenous population only in city areas, or areas with a low percentage of the population who are Indigenous. They also clearly demonstrate that variation within the Indigenous and non-Indigenous populations is greater than the differences between the two populations as measured by the national average.

INDIGENOUS TEMPORARY MOBILITY: THE DEMOGRAPHIC DIMENSION

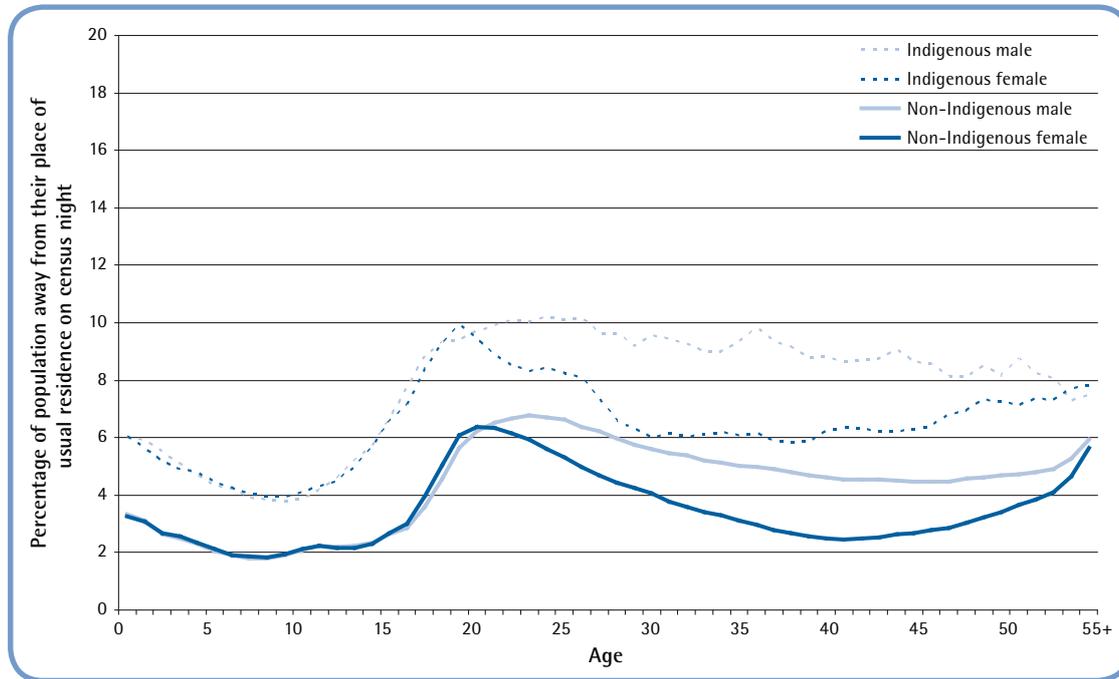
Existing research suggests that stage in the life cycle has a significant impact on Indigenous temporary mobility practices (Prout 2008a). However, as Taylor (2009) notes, Indigenous life cycle stages do not necessarily correspond to those observed for non-Indigenous Australians. Most small-scale studies of temporary mobility describe a peak in movement amongst 17–25 year olds (Birdsall 1988; Burns 2006; Finlayson 1991; Morphy 2007a; Prout 2007; Smith 2002). This youth mobility is the product of aspirations to explore, develop and contest networks of security and belonging (Prout 2008a). Such movement is a commonly observed and accepted transitional stage within diverse Indigenous social and cultural worlds.

Excepting this peak in mobility among Indigenous youth, life-stage appears to shape the *reasons* for Indigenous temporary movement more than the *frequency* of such moves. For example, many Indigenous children are highly mobile, travelling with their families and guardians, or independently (Prout 2009a; Sorin & Ilisote 2006). Other studies also describe older people as frequent movers (Birdsall 1988; Morphy 2007b; Smith 2002). Whilst they may be pillars of their community and firmly associated with particular locales, they can also be regularly on the road attending to social and ceremonial obligations, acting in advisory or managerial capacities, or travelling between home and specialist health services (see for example Coulehan 1995; Prout 2008b). On the basis of these ethnographic findings, and in the absence of existing statistical analyses, Prout (2008a) speculates that the age/mobility curve would be flatter for the Indigenous population than for the non-Indigenous population.

Few studies provide any analysis of the gendered nature of Indigenous temporary mobility. Birdsall (1988) and Gale (1981) both observed a matriarchal social hierarchy amongst Indigenous populations living in urban and coastal areas. Both researchers noted that in these respective urban settings, Indigenous men's sphere of social influence and belonging had become increasingly marginal. However, in both studies, the precise implications for the mobility practices of both men and women were unclear. This orientation toward female family headship seemed to generate increased mobility for some women and less movement for others. The spatial implications of Indigenous male 'displacement' from urban settings were not explored in either study.

The existing literature clearly identifies a range of gaps in understanding the demographic dimensions of Indigenous temporary mobility. It also points to several possible demographic patterns that have yet to be quantified or tested statistically. Using snapshot data of those who identified as being away from their usual place of residence at the time of the 2006 Census enumeration, we present several figures to explore what the census data indicates about the demographic composition of Indigenous movers. Fig. 1 presents the percentage of individuals enumerated away from their place of usual residence by age, Indigenous status, and gender.³

Fig. 1. Percentage of the population away from their place of usual residence by age group



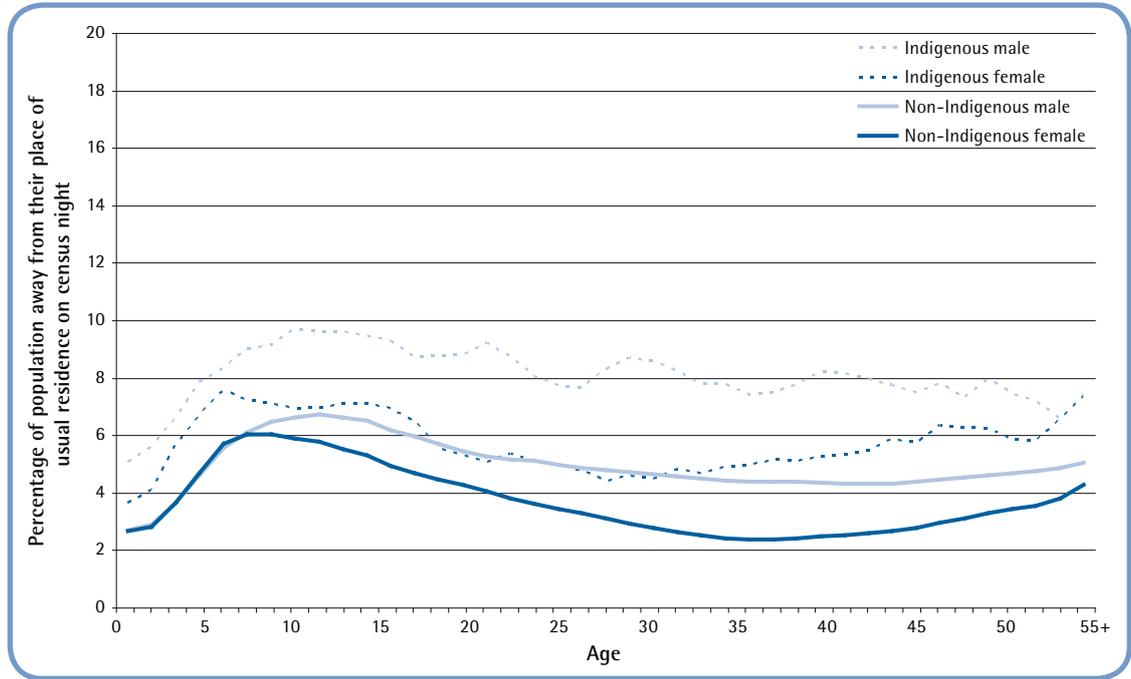
Source: Authors' calculations using the ABS Census of Population and Housing 2006.

Fig. 1 shows that up until age 18 (that is, during the years of compulsory schooling), the pattern in changing rates of temporary mobility is consistent across the population, albeit proportionally higher for the Indigenous population. According to the data, movement is clearly lowest between the ages of compulsory schooling (ages 5–15), after which it begins to increase sharply. Beyond age 18, there is substantial divergence by gender and, to a lesser extent, by Indigenous status. For Indigenous and non-Indigenous males the percentage stays high between age 18 and 26, then declines slowly. For females, however, the percentages drop dramatically beyond the peak in the early 20s.

Fig. 1 also suggests that there are significant differences by gender in mobility practices. Given that there are similar differences between males and females across the population, it is likely that at least part of the explanation for these differences is common for the Indigenous and non-Indigenous populations. However, the following two figures show that, for the enumerated population, differential engagement with the labour market is not the likely explanation.

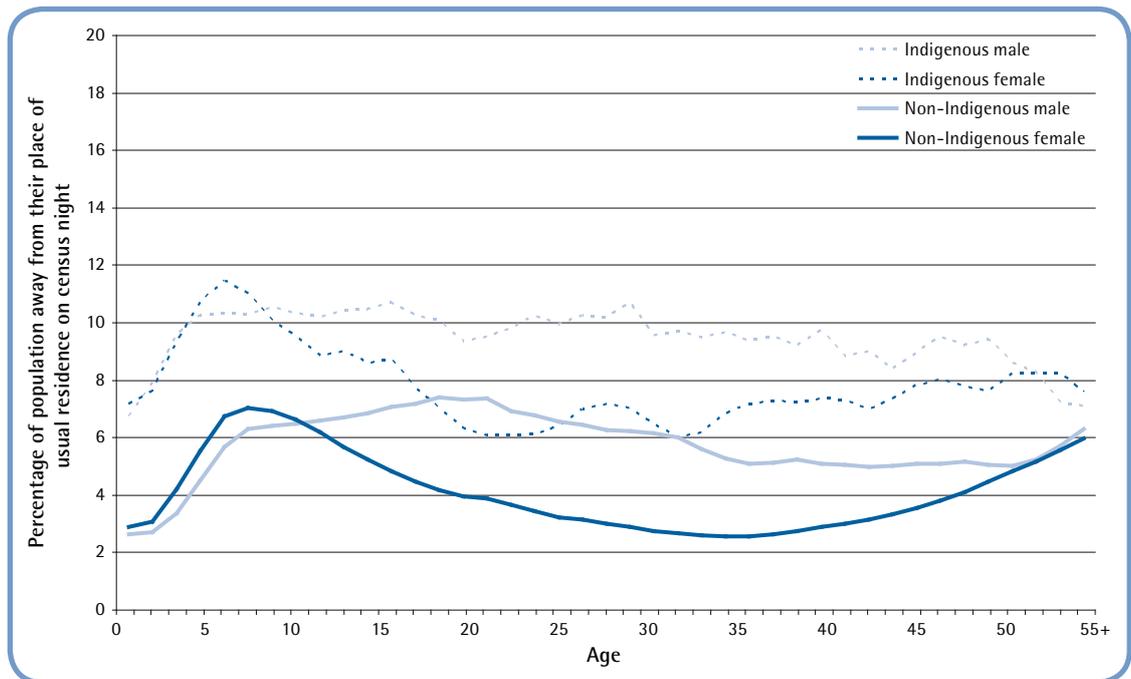
While, both Figs 2 and 3 show that the percentage of employed men away from their place of usual residence was slightly lower than those not employed, the gender differences are similar to Fig. 1. The most likely explanation for the gender difference in rates of temporary mobility is therefore that the gendered process of child rearing ultimately has a limiting effect on mobility practices. According to the Census, while 6.43 per cent of mothers aged 20 years and over (when the values for males and females diverge) were away from their place of usual residence, 8.54 per cent of women in the same age bracket who were not mothers were temporarily away at the time of enumeration.

Fig. 2. Percentage of the population away from their place of usual residence by age group, employed



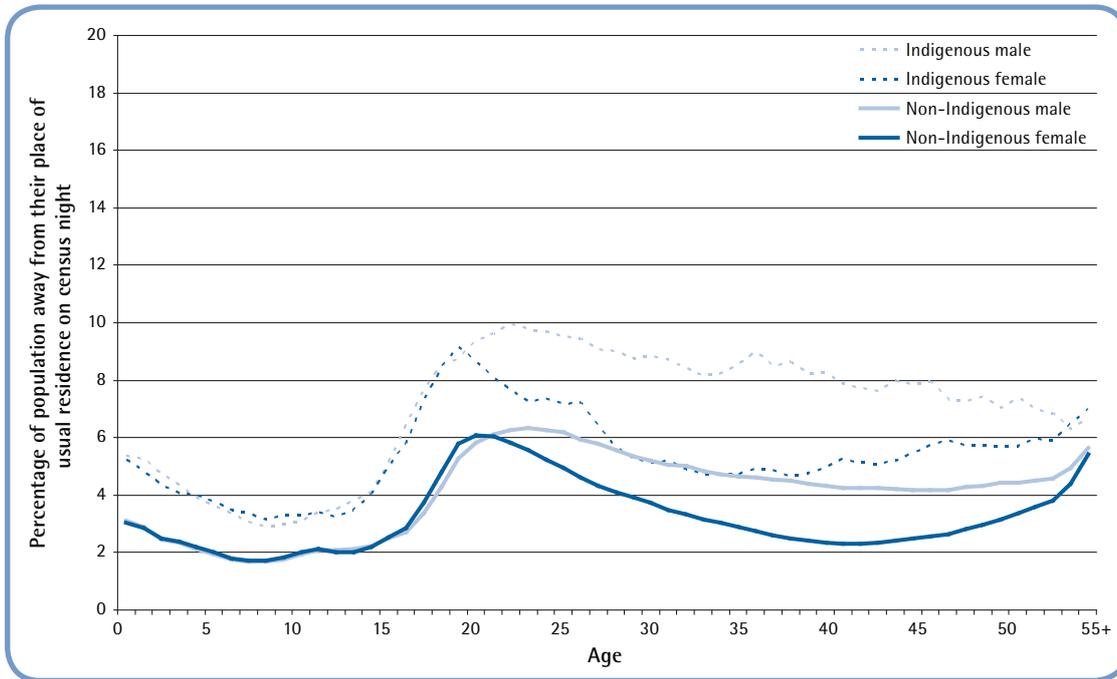
Source: Authors' calculations using the ABS Census of Population and Housing 2006.

Fig. 3. Percentage of the population away from their place of usual residence by age group, not employed



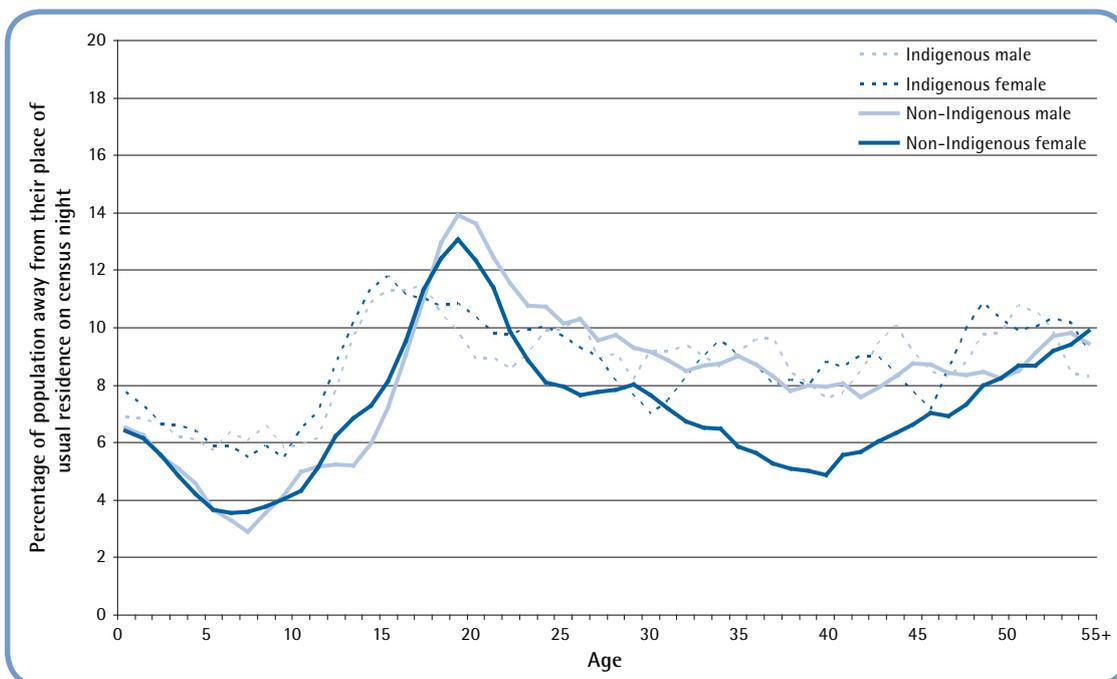
Source: Authors' calculations using the ABS Census of Population and Housing 2006.

Fig. 4. Percentage of the population away from their place of usual residence by age group, major cities and regional areas



Source: Authors' calculations using the ABS Census of Population and Housing 2006.

Fig. 5. Percentage of the population away from their place of usual residence by age group, remote Australia



Source: Authors' calculations using the ABS Census of Population and Housing 2006.

Whatever the reasons for gendered differences in the life cycle patterns of temporary mobility, the following two figures show that they are not consistent across Australia by geography. Fig. 4 shows the percentage of the population—whose place of usual residence was in major cities or regional areas—that was away at the time of enumeration.

Although the lines in Fig. 4 are slightly lower than those in Fig. 1 for the relevant Australian populations, it is clear that the patterns by age are very similar. This is not the case for those whose usual residence is in remote Australia, as shown by Fig. 5.

For Indigenous Australians in remote Australia, the probability of being away from their place of usual residence peaks at around the age of 15. Even at age 13 and 14, when children are required by the state to be attending school, the percentage is close to, or above, 10 per cent. There is a slight decline from this peak, but crucially, there is no consistent difference between Indigenous males and females. Clearly, whatever is driving the gender difference for non-Indigenous Australians and non-remote Indigenous Australians, it either has no effect for the remote Indigenous population or is counterbalanced by other factors that impact on Indigenous females separately.

INDIGENOUS TEMPORARY MOBILITY: THE SPATIAL DIMENSION

So far, census data has painted a picture of complexity and variation with regard to the geographical and demographic dimensions of measured temporary mobility. It also reveals nuances in the scale and direction of measured temporary movement.

Brody (2000) notes that hunter-gatherer societies have traditionally been far less mobile than their agriculturally-based counterparts. He argues that when one scans the movie of human history, hunter-gatherer populations such as Indigenous Australians are found to have remained largely within their regions of belonging, whereas agrarian and industrial cultures have spread across the earth. In this sense, Indigenous Australians have been comparatively less mobile than non-Indigenous peoples. Historically, while Indigenous Australians may have moved frequently, their mobilities were often confined to small regions, and were rarely expansionist in nature (Peterson 2004; Young & Doohan 1989). Taylor (1997) describes a similar contemporary pattern whereby Indigenous mobilities are generally more frequent over the short-term and at smaller spatial scales, and less frequent over longer distances (Taylor 1997). Census snapshot data cannot provide any measure of the duration of Indigenous temporary mobility practices, but it can provide some measure of distances.

In Table 2, we use categories of census geography to examine the measured spatial patterns of Indigenous temporary mobility. The first is the broad category of the percentage of the population away from their place of usual residence. The second is those who were away from their Indigenous Area (the population of interest in this section). The third category is the proportion of the population away from their Indigenous Region of usual residence, the most aggregated level of the AIGC (of which there were 37 in 2006). The final row shows the percentage of the population who were away from their State/Territory.

Table 2. Percentage of the population away from usual residence or geographic area on census night

Level of geography	Indigenous (%)	Non-Indigenous (%)	Ratio
Usual residence on census night	6.78	4.34	1.56
IARE (531 IAREs)	4.40	3.25	1.35
Indigenous Region (37 Indigenous Regions)	2.97	2.39	1.24
State/Territory (8 States/Territories)	1.17	1.48	0.79

Source: Authors' calculations using the ABS Census of Population and Housing 2006.

Table 2 supports the notion that with increasing distance, temporary movement decreases. It also indicates that this pattern is more pronounced for the Indigenous population. Indeed, according to census data, Indigenous Australians were less likely than non-Indigenous Australians to be away from their State/Territory of usual residence on census night.

Just as there is variation *between* Indigenous and non-Indigenous Australians in terms of the scale of temporary mobility, there is also variation *within* the respective populations. Table 3 repeats the regression analysis presented earlier, comparing the average distance between a person's Indigenous Area of usual residence and their Indigenous Area of enumeration. Indigenous and non-Indigenous Australians are modelled separately using the same three sets of explanatory variables introduced in Table 1.

Model 1 shows that Indigenous and non-Indigenous Australians whose usual residence is in areas that have a relatively high Indigenous share are more likely to be relatively far away when not at their place of usual residence. However, the magnitude of this association is substantially higher for the non-Indigenous population. For example, Indigenous Australians who lived in areas where one per cent of the population were Indigenous were estimated to be 324 kilometres (km) away from their area of usual residence, compared to 419km for non-Indigenous Australians in similar areas. Compared to this, Indigenous Australians in areas which had a 10 per cent Indigenous share were estimated to be 354km away, a difference of only 30km. By contrast, non-Indigenous Australians in such areas were estimated to be 527km away, a difference of 107km.

Given the weak association with Indigenous share for the Indigenous population, it is perhaps not surprising that there is no significant association with the standard remoteness classification. For the non-Indigenous population, on the other hand, those who were away from outer regional, remote and very remote areas were estimated to be on average further away than those from major cities or inner regional areas.

While there were no significant differences by remoteness for the Indigenous population, there were differences when extra information was taken into account using the location type classification. Indigenous Australians from large regional towns, or remote towns, were on average further away than those from city areas. Those from Indigenous towns, on the other hand were not as far away as those from city areas. There were also considerable differences between residents of remote dispersed settlements and town camps, in terms of their distance from usual residence. One might speculate that many of these town camp residents were temporarily in adjacent towns at the time of enumeration, but evidence from other studies suggests that linkages to more remote homelands are often just as strong, if not stronger than to adjacent urban residences (see for example Foster et al. 2005; Sansom 1980; Taylor 1988).

Table 3. Factors associated with the average distance away from their place of usual residence

Characteristics of IARE	Indigenous			Non-Indigenous		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Percentage of population Indigenous (linear)	3.397			12.128		
Percentage of population Indigenous (squared)	-0.042			-0.131		
Inner regional area		n.s.			n.s.	
Outer regional area		n.s.			122.651	
Remote area		n.s.			97.262	
Very remote area		n.s.			110.330	
Large regional towns			74.277			114.166
Small regional towns and localities			n.s.			n.s.
Regional rural areas			n.s.			n.s.
Remote towns			65.229*			n.s.
Indigenous towns			-52.223*			-92.107
Town camps			-235.863			-477.103
Remote dispersed settlements			-116.723			n.s.
Victoria			123.515			196.631
Queensland			126.750			108.747
South Australia			132.610			201.714
Western Australia			226.321			345.056
Tasmania			127.340			313.530
Northern Territory			144.961			303.949
Australian Capital Territory			185.120*			n.s.
Constant	320.564	310.386	218.418	406.878	393.898	274.531
Adjusted R-Squared	0.0182	<0	0.1654	0.0680	0.0248	0.2512

Notes: The base case for Model 2 is 'major cities'; the base case for Model 3 is 'city areas' in New South Wales.
n.s. = variables that are not significant at the 10% level of significance.
* = variables that are significant at the 5% level of significance.

Source: Authors' calculations using the ABS Census of Population and Housing 2006.

TEMPORARY MOBILITY AND POPULATION COUNTS

In the introduction to this paper, we described four key policy implications of Indigenous temporary mobility practices. One of those was managing the effects of large population influxes and exoduses on social and physical infrastructure in particular locales. Temporary mobility can have significant impacts on population size at both source and destination locations at a particular point in time, particularly when large groups of individuals gather or leave certain places for ceremonial or social gatherings. There are also more constant, smaller flows of individuals and families between locales to access services and market opportunities in larger settlements, and in the reverse direction, to visit family and country, or escape the negative aspects of life in large towns and cities (Prout 2008a). The net balance of these outward and inward flows calls into question the adequacy of Estimated Resident Population counts as the primary basis for funding and resource allocation.

Table 4. Factors associated with the percentage of usual residents temporarily away from the IARE (outward temporary mobility)

Characteristics of IARE	Indigenous			Non-Indigenous		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Percentage of population Indigenous (linear)	0.128			0.089		
Percentage of population Indigenous (squared)	-0.001			n.s.		
Inner regional area		-0.594*			1.558*	
Outer regional area		n.s.			2.009	
Remote area		1.293			3.617	
Very remote area		2.988			7.501	
Large regional towns			n.s.			1.414*
Small regional towns and localities			n.s.			2.143
Regional rural areas			n.s.			n.s.
Remote towns			1.445			3.338
Indigenous towns			1.295			8.640
Town camps			n.s.			n.s.
Remote dispersed settlements			3.193			5.165
Victoria			n.s.			n.s.
Queensland			0.790			n.s.
South Australia			n.s.			n.s.
Western Australia			1.959			1.666*
Tasmania			n.s.			n.s.
Northern Territory			1.316			n.s.
Australian Capital Territory			n.s.			n.s.
Constant	3.872	4.319	3.831	3.622	2.855	2.453
Adjusted R-Squared	0.1381	0.1787	0.2203	0.1768	0.1604	0.1635

Notes: The base case for Model 2 is 'major cities'; the base case for Model 3 is 'city areas' in New South Wales.
n.s. = variables that are not significant at the 10% level of significance.
* = variables that are significant at the 5% level of significance.

Source: Authors' calculations using the ABS Census of Population and Housing 2006.

In this final section, we examine the impacts of temporary mobility on the size of the population in a given area at a particular point in time. Three sets of estimations are presented. Only those who were away from their Indigenous Area of usual residence are counted as movers because movement within towns or suburbs is less likely to impact on the provision of services in the area. Using a modelling approach, we consider the factors associated with three related aspects of temporary mobility:

- outward mobility or the percentage of usual residents away from that area at the time of enumeration (Table 4);
- inward mobility or the population who are temporary visitors into the area as a percentage of the usual resident population (Table 5); and
- net temporary mobility or the difference between the two (Table 6).

Table 5. Factors associated with the percentage of temporary visitors into the IARE (inward temporary mobility)

Characteristics of IARE	Indigenous			Non-Indigenous		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Percentage of population Indigenous (linear)	0.177			3.666		
Percentage of population Indigenous (squared)	-0.002			-0.033		
Inner regional area		-2.038			n.s.	
Outer regional area		n.s.			n.s.	
Remote area		n.s.			25.719	
Very remote area		1.194*			59.657	
Large regional towns			n.s.			n.s.
Small regional towns and localities			-1.309*			n.s.
Regional rural areas			n.s.			n.s.
Remote towns			n.s.			22.861
Indigenous towns			-2.373			26.967
Town camps			n.s.			87.534
Remote dispersed settlements			2.206			105.300
Victoria			n.s.			n.s.
Queensland			1.746			n.s.
South Australia			n.s.			n.s.
Western Australia			3.443			18.506
Tasmania			n.s.			n.s.
Northern Territory			2.924			n.s.
Australian Capital Territory			n.s.			n.s.
Constant	4.344	5.276	4.348	-8.697	n.s.	n.s.
Adjusted R-Squared	0.0331	0.0326	0.0955	0.2661	0.2178	0.3609

Notes: The base case for Model 2 is 'major cities'; the base case for Model 3 is 'city areas' in New South Wales.
n.s. = variables that are not significant at the 10% level of significance.
* = variables that are significant at the 5% level of significance.

Source: Authors' calculations using the ABS Census of Population and Housing 2006.

Areas with a relatively high proportion of the population who were Indigenous had relatively high rates of Indigenous usual residents temporarily away from the area at the time of enumeration. While there is some non-linearity (as shown by the negative co-efficient on the squared term), the rate of outward temporary mobility of the Indigenous population is not estimated to reach a peak until the percentage who identify as being Indigenous equals 60.4 per cent of the population. This peak corresponds to an estimated 11.6 per cent of the Indigenous population being away from their IARE of usual residence. There is also a higher rate of non-Indigenous outward temporary mobility the higher the Indigenous share of the area, however in this case the squared term is not significant.

Amongst both Indigenous and non-Indigenous populations, there was a significantly higher rate of outward temporary mobility in remote and very remote areas than there was in major cities. According to the 'location type' classification, remote dispersed settlements experienced the highest rate of Indigenous

outward temporary mobility, though the coefficients for remote towns and Indigenous towns were also significant. For the non-Indigenous population, the largest difference from city areas was in Indigenous towns. For both populations, the coefficient for town camps is not significantly different from zero.

Even after controlling for location type, Western Australia, Queensland and the Northern Territory experienced higher rates of Indigenous outward temporary mobility than New South Wales. So, for example, a remote dispersed settlement in Western Australia was estimated to have 9.0 per cent of the Indigenous usual resident population away from the area on census night compared to 3.8 per cent in city areas in New South Wales (the base case).

Table 5 analyses types of areas where Indigenous and non-Indigenous Australians are visiting (inward temporary mobility).⁴

The results presented in the first column of Table 5 show that areas with a relatively high Indigenous share also have high rates of inward temporary mobility. Once again there is a negative coefficient for the squared term and when the two coefficients are put together, a peak rate of inward mobility occurs where 47.9 per cent of the population identify as being Indigenous. This corresponds to a rate of Indigenous inward temporary mobility of 12.8 per cent. Comparing the coefficients in Model 1 for the Indigenous and non-Indigenous population, it is clear that the rate of non-Indigenous inward temporary mobility rises very quickly in concert with increasing Indigenous share of the area. So much so that the model predicts that in areas where 54.8 per cent of the population identify as being Indigenous, there is a rate of non-Indigenous net temporary mobility of 192.3 per cent. That is, there are almost two visitors for every one non-Indigenous usual resident. This high rate of non-Indigenous inward temporary mobility in remote parts of Australia is confirmed by the results from Model 2.

Model 3 shows substantial variation in non-Indigenous inward temporary mobility within remote Australia. There are predicted values of 22.9 per cent in remote towns, but 105.3 per cent across remote dispersed settlements. Interestingly, for the Indigenous population, Indigenous towns have a lower rate of temporary inward mobility than major cities, whereas remote dispersed settlements have a significantly higher rate. Once again, Western Australia, the Northern Territory and Queensland have significantly higher rates than New South Wales for the Indigenous population.

The results in Tables 4 and 5 show that, in general, areas with a high Indigenous share or those that are relatively remote have high rates of both outward and inward temporary mobility. This implies a certain degree of churn in these areas, with those people away from the area temporarily being balanced by visitors into the area. So, how do these two balance out and what are the geographic factors associated with net temporary mobility?

For the Indigenous population, as shown in Table 6, there was no significant association between the Indigenous share of the population in the area and the rate of net temporary mobility. For the non-Indigenous population however, areas that had a high Indigenous share had relatively high net inflows of visitors into the area.

Model 2 shows that, compared to major cities, inner regional areas had relatively high net temporary outflows of the Indigenous population, as did very remote areas. For the non-Indigenous population, however, there was no significant difference between major cities, inner regional or outer regional areas. However, remote areas in general and very remote areas in particular had significantly high net inflows. Taken together, Indigenous Australians were on balance away from inner regional and very remote areas on census night, whereas non-Indigenous Australians were on balance visiting remote and very remote areas.

Table 6. Factors associated with the net percentage of temporary visitors into the IARE on census night (net temporary mobility)

Characteristics of IARE	Indigenous			Non-Indigenous		
	Model 1	Model 2	Model 3	Model 1	Model 2	Model 3
Percentage of population Indigenous (linear)	n.s.			3.577		
Percentage of population Indigenous (squared)	-0.001*			-0.033		
Inner regional area		-1.444			n.s.	
Outer regional area		n.s.			n.s.	
Remote area		n.s.			22.102	
Very remote area		-1.794			52.156	
Large regional towns			n.s.			n.s.
Small regional towns and localities			n.s.			n.s.
Regional rural areas			n.s.			n.s.
Remote towns			n.s.			19.523
Indigenous towns			-3.668			18.328
Town camps			6.522			80.217
Remote dispersed settlements			n.s.			100.136
Victoria			n.s.			n.s.
Queensland			n.s.			n.s.
South Australia			n.s.			n.s.
Western Australia			1.484*			16.840
Tasmania			n.s.			n.s.
Northern Territory			1.608*			n.s.
Australian Capital Territory			n.s.			n.s.
Constant	n.s.	0.957	n.s.	-12.319	n.s.	n.s.
Adjusted R-Squared	0.0265	0.0141	0.0279	0.2303	0.1723	0.3261

Notes: The base case for Model 2 is 'major cities'; the base case for Model 3 is 'city areas' in New South Wales.
n.s. = variables that are not significant at the 10% level of significance.
* = variables that are significant at the 5% level of significance.

Source: Authors' calculations using the ABS Census of Population and Housing 2006.

The results from Model 3 confirm that there are very few systematic patterns to net Indigenous temporary mobility. Indigenous towns have slightly higher net outflows whereas town camps have higher net inflows than city areas. For the non-Indigenous population, all four of the remote location types have higher net inflows than city areas, with remote dispersed settlements estimated to have a net inflow of greater than 100 per cent. What this means is that even after taking into account those who were away from the area, there were more than twice as many non-Indigenous people visiting remote dispersed settlements on census night as there were usual residents. Interestingly, even after controlling for location type, there were relatively high net inflows into Western Australia for the Indigenous and non-Indigenous population and into the Northern Territory for the Indigenous population.

Table 7. IAREs with highest and lowest net Indigenous temporary mobility, 2006

IARE	Net Indigenous temporary mobility	Indigenous usual resident count	Location type	State/Territory
Lowest net temporary mobility				
Lajamanu	-8.0	614	Indigenous towns	NT
Borrooloola	-7.8	579	Indigenous towns	NT
Gapuwiyak and Outstations	-6.8	1051	Indigenous towns	NT
Maningrida	-6.7	1906	Indigenous towns	NT
Petermann/Simpson	-6.4	843	Remote dispersed settlements	NT
Yugul Mangi	-5.3	1519	Indigenous towns	NT
Hermannsburg (Ntaria)	-5.2	506	Indigenous towns	NT
Greenough	-5.1	746	Large regional towns	WA
Bamaga	-5.0	686	Indigenous towns	Qld
Fitzroy River	-4.9	911	Remote dispersed settlements	WA
Highest net temporary mobility				
Marrara/Winnellie/Berrimah	30.6	632	Large regional towns	NT
Adelaide/Prospect/Walkerville	18.6	688	City areas	SA
Tiwi/Wanguri/Lee Point/Leanyer	17.0	774	Large regional towns	NT
Alice Springs—Town Camps	14.3	1141	Town camps	NT
Coomalie/Belyuen/Cox Peninsula/Cox-Finniss	12.8	508	Remote dispersed settlements	NT
Coconut Grove/Ludmilla	12.0	773	Large regional towns	NT
Nhulunbuy/Marngarr/Gumatj and Outstations/Marthakal Homelands	9.7	941	Remote dispersed settlements	NT
Port Augusta Region Bal	9.3	906	Remote dispersed settlements	SA
Tennant Creek—Town Camps	7.8	540	Town camps	NT
Darwin/Inner Suburbs	6.7	879	Large regional towns	NT
Note: Excludes those with a population count of under 500 people in 2006.				
Source: Authors' calculations using the ABS Census of Population and Housing 2006.				

Perhaps the most interesting findings for net temporary mobility are the adjusted R-squared values from the models. The low values for the Indigenous population would suggest very little systematic difference in net temporary mobility by the geographic characteristics of the area considered. The implication is that in net terms, across all categories there are particular areas with higher enumerated populations than the usual resident population alongside areas with lower enumerated populations.

This variation within location type is further highlighted by considering the areas with relatively low net temporary mobility and those with very high net temporary mobility. Focusing on those areas with at least 500 usual residents counted in 2006 (in order to avoid the variability associated with low population counts), Table 7 documents the ten areas with the lowest net temporary mobility as well as the ten areas with the highest net temporary mobility according to the 2006 Census. The State/Territory and location type are given for context, with the values for all 531 Indigenous Areas available for download at <http://www.anu.edu.au/caepr/population.php>.

Table 7 shows that the majority of areas with low net temporary mobility (that is, places with fewer temporary movers coming in than going out) are classified as being Indigenous towns. Only one area—Greenough in the Indigenous Region of Geraldton—is in non-remote Australia. Conversely, five of the ten areas with the highest net temporary mobility (that is, places with more temporary movers coming in than leaving) are larger regional towns or city areas. A further two are classified as town camps. It would appear, therefore, that there are some geographic patterns to net temporary mobility at the extreme ends of the distribution. Notably, much of the movement in these extremes takes place in the Northern Territory.

NUMBERS AND NARRATIVES

The preceding analysis of 2006 Census data presents novel findings regarding the demographic factors that appear to characterise Indigenous temporary mobility. It also suggests that, in contrast to the non-Indigenous population, the geographies that shape measured Indigenous temporary movements do not align consistently with census geographies. For a number of reasons, however, the census findings presented in this paper paint only a partial picture of Indigenous temporary mobility.

As has been well documented elsewhere, census data regarding Indigenous populations continue to be constrained by issues of coverage and accuracy (Martin et al. 2002; Martin & Taylor 1996; Memmott et al. 2004; Newbold 2004; Taylor & Bell 2004; Warchivker, Tjapangati & Wakerman 2000; Young 1990; Young & Doohan 1989). The extension of the post-enumeration survey to remote Aboriginal communities for the first time after the 2006 Census revealed the potential extent of these problems. Having analysed the undercount in their recent baseline regional analysis of 2006 Census data, Taylor and Biddle (2008) concluded that in many areas the 2006 Census might be more appropriately conceptualised as a sample of the Indigenous population rather than a census of the whole population.

Given the extent of the undercount, there is likely to be considerable uncertainty regarding estimated rates of temporary mobility, and the demographic characteristics of those who were missed. If those missed during the enumeration process were not a random subset of the population, then there will be biases in the results. Observations of the 2006 Census revealed that in some parts of regional and remote Australia, such as Arnhem Land and Wadeye, the collection period exceeded 10 weeks, and Indigenous temporary mobility had a pervasive impact on the accuracy and duration of the enumeration (Morphy 2007a; Morphy, Sanders & Taylor 2007; Taylor 2007). These studies suggested that many highly mobile individuals were either missed altogether, or counted more than once. One might speculate, therefore, that the Indigenous census 'sample' was not representative; in many cases under- or over-enumerating the most mobile members of the population, particularly in areas with longer collection periods. Census snapshots of those away from their usual place of residence are consequently unlikely to accurately reflect the pattern, intensity and composition of actual temporary movement amongst the Indigenous population.

Evidence from earlier censuses supports the above hypothesis. In an analysis of the 1986 Census in the Cape York township of Aurukun, Martin and Taylor (1996) calculated a 17 per cent undercount and noted that the 'missing' people were generally, young, more mobile and more socially marginalised. This indicates that the 'sample' is not random, but is more likely to capture less mobile individuals.

There are other issues of census language and concepts that may affect the integrity of the data from which snapshots of temporary mobility are derived. A number of scholars have noted that the census concept of 'usual place of residence', which assumes a single locale of residency, is not consistent with Indigenous concepts of usual residence which may encompass several specific locales within a region of belonging or association (Memmott et al. 2004; Newbold 2004; Young 1990). By this latter interpretation a person may have been away from one household of 'usual residence' on census night, but not have

considered themselves away from their usual place of residence. Individuals who engage in bi-local or multi-local living would not necessarily have been registered as temporary movers by the census manipulation described in the introduction. Again, the ethnographic evidence from the 2006 Census enumeration process in remote Australia strongly supports this (Morphy 2007a; Taylor 2007; Thorburn 2007). Morphy (2007a) also noted an increasing politicisation of responses to particular census questions amongst Yolgnu people. For strategic reasons, some individuals wanted to be enumerated 'as if' they were in an alternate location to the one in which they were being enumerated. These issues of census language and concepts, and their capacity to reflect the realities of Indigenous spatialities all impinge on the integrity of census temporary mobility snapshots.

Even if these issues of coverage and language could be satisfactorily resolved, however, a more fundamental limitation remains. As noted in the introduction, census-based analyses of temporary mobility will always be static snapshots that can say nothing of the frequency and flows of movement (Bell 2004). For Indigenous populations amongst whom temporary movement can be frequent and/or seasonal, this limitation is particularly constraining. As Taylor (1992: 88) notes, '... the census definition of population movement presents an essentially static picture of what is intrinsically a dynamic situation'. Of course, the census was not designed to capture these dynamic population flows. However, the question of what is measured, and therefore statistically 'visible', using conventional instruments such as the census, is not merely incidental here. It has fundamental and far-reaching implications for policy makers.

Inherent within 'evidence-based' approaches to policy development and program delivery are a series of assumptions about what should be measured, and the appropriate tools of measurement. History, and a compelling emerging literature, would suggest that many of these assumptions, particularly with regard to Indigenous demography, have served to further entrench Indigenous disadvantage (Morphy 2007b; Taylor 2008, 2009). Morphy (2007b), for example, emphasises the culturally imbedded and potentially marginalising nature of conventional, mainstream measures of Indigenous demography. She explains that the census uses categories of measurement that assume certain norms of social organisation and demographic transition. Morphy notes that amongst the Yolgnu people of northeast Arnhem Land, a different set of norms shape social organisation and demographic process. She argues that the result of this asynchronous relationship between reality and measurement is a perpetuation of marginalising perspectives of Indigenous life projects:

The apparent capturing of Aboriginal sociality within the bounded container model of census data provides a basis for believing that Aboriginal people are just not very good at being contained: their households are too big and they move around too much; and it is government's job to formulate policies that help them to become better contained citizens ... What this paper argues is that [census] categories are not simply 'statistical' but also culturally embedded (Morphy 2007b: 178–9).

Morphy ultimately advocates for alternative demographic measures that reflect Indigenous realities and render their socio-spatial norms and practices more 'legible to the state' (Morphy 2007b: 164).

If the census remains the only source from which standardised, nationally comparable data about Indigenous temporary mobility can be derived, important aspects of these population dynamics will continue to be masked. Consequently, resources and services will continue to be allocated and delivered in ways that do not match the actual residency patterns of many Indigenous peoples. A study by Palmer and Brady in the late 1980s demonstrates this point.

Table 8. Results of Palmer and Brady's (1988) Population Survey in Oak Valley

	May 1987 (1)	May 1987 (2)	Aug 1987 (1)	Aug 1987 (2)	Nov 1987 (1)	Nov 1987 (2)	Feb 1988 (1)	Feb 1988 (2)
Enumerated population	73	118	73	107	11	40	45	85
Note:	(1) = First count of the month; (2) = Second count of the month.							
Source:	Adapted from Palmer and Brady (1988).							

As part of an analysis of the diet and lifestyle of Aboriginal people in the Maralinga region of South Australia, Palmer and Brady conducted a population survey, consisting of eight censuses over a nine-month period in the small community of Oak Valley (Palmer & Brady 1988). As Table 8 shows, the resident population varied at each census, from 40 to 118, and there was no consistent pattern of population growth or decline. Palmer and Brady (1988) found that the average population was 69, but a total of 286 individuals were enumerated across all censuses. Critically, in terms of temporary mobility, no person was present at all eight counts, and 133 people were present for only one count.

While Palmer and Brady's population survey is dated, and not representative of the totality of Indigenous experience regarding temporary mobility practices, we employ it here to illustrate how snapshot population measures can fail to capture critical aspects of Indigenous temporary mobility dynamics. Another example, this time in the context of a single residence, is Musharbash (2008) who, during fieldwork in Yuendumu in the central Northern Territory, identified more than 160 separate individuals who stayed in a single four-bedroom house over an 18-month period. These examples clearly demonstrate that the distinction between 'resident' and 'visitor' can be very blurred. Furthermore, in Palmer and Brady (1988), the actual service population included changing combinations of up to almost 300 different individuals—a vastly different picture from what would have been derived from a snapshot taken at any point during that year. It seems critical therefore, in analysing Indigenous temporary mobility data, to be transparent about what is measured and what is missed, and to consider how related discourses, policies and practices might consequently be shaped.

CONCLUSION

There is clearly a pressing need for standardised and culturally informed quantitative data about the volume, frequency and flows of Indigenous temporary movement at comparable spatial scales. Such measures would provide a contextual framework into which the small but growing body of localised, qualitative case studies of mobility can be situated. They are also arguably essential to the tasks of justly and efficiently allocating resources—including social services and physical infrastructure—for Indigenous populations.

Drawing together a range of quantitative information on measured temporary mobility from the 2006 Census of Population and Housing, the preceding analysis produced a number of noteworthy findings. At a national level, the data show that Indigenous Australians were more likely to be away from their place of usual residence at the time of census enumeration than the non-Indigenous population.

This measure of temporary mobility peaks in young adulthood with around 10 per cent of Indigenous men and women aged 18 to 20 away from their place of usual residence on census night. For females, the rate then declines quite substantially, such that by the age of 30, only around six per cent of the population

were temporarily absent. For Indigenous males, on the other hand, the rate stays at very high levels throughout a person's 20s and only declines slightly throughout their 30s and 40s.

Underneath these national averages, there was substantial diversity by geography. According to the census snapshot, Indigenous Australians in urban or regional Australia had similar or slightly higher levels of temporary mobility than the non-Indigenous population. However, for remote Australia it was the non-Indigenous population that was highly mobile. Furthermore, for those who were temporarily mobile, the distance between one's area of enumeration and area of usual residence was greater for the non-Indigenous than the Indigenous population.

Perhaps though, the most significant finding to emerge from the above analysis is that while many patterns of measured non-Indigenous temporary mobility are clearly illuminated by the standard census categories of geography, the same cannot be said for the Indigenous population. Indeed our findings suggest that the census is a relatively blunt instrument in the task of elucidating even the geographical factors that drive and shape Indigenous temporary movement. This was particularly the case when the net effect of temporary flows into and out of an area were considered, with very little difference across Australia by Indigenous population share, standard categories of remoteness, location type or State/Territory.

There are, of course, limitations on the reliability of these data particularly given the extent of the Indigenous undercount, and divergent interpretations of census language and concepts such as 'usual residence'. Some of these limitations could be minimised in future censuses. If, for example, the undercount was reduced, snapshot data would be rendered more reliable. However, the census will never be able to measure the duration of stay, frequency of movement, periodicity and seasonality—components of such population dynamics that have critical importance for policy makers (Bell 2004). We therefore join Morphy (2007b) in calling for supplementary measures of Indigenous temporary mobility that render the dynamic nature of these movements more statistically 'legible to the state'.

A number of localised studies of Indigenous mobility have drawn on innovative data sources to statistically measure the frequency and volume of flows of temporary movement through particular locales (see for example Altman 1987; Brooks & Kral 2007; Mursharbash 2008; Smith 2004). Although limited in scope and scale, they remain the primary sources for describing the social and service-related impacts of these population dynamics at source and destination locations, and detailing the broader implications for service delivery and investment. When drawn together, these smaller scale studies build a general picture of the spatial, temporal and demographic dimensions of temporary mobility and expose some of the 'known unknowables' of these population dynamics (Prout 2008b).

What remains elusive however, are standardised nationally comparable data that can track these dynamic flows over time. However, even when constructed, such quantitative data will only ever sketch an outline of Indigenous temporary mobility practices. The motivations for movement can only be filled in by qualitative evidence that accurately voices and reflects the aspirations and circumstances of Indigenous Australians. Indeed, in advocating an 'evidence-based' approach to Indigenous policy making, the United Nations Permanent Forum on Indigenous Issues has endorsed the mixing of both statistical and descriptive data to provide a more holistic view of the welfare of indigenous populations globally. Specifically, they suggest, qualitative data are able to explore and measure complex issues relevant to Indigenous peoples' sense of wellbeing, and to assess the true social situations from which 'hard data' are extracted (United Nations 2004). Ultimately, building a sound evidence base for policy making, that thoughtfully considers Indigenous temporary mobilities, will require that researchers, policy makers and Indigenous populations reach beyond convention, negotiate and embrace innovation in quantitative methods and data development, and extend the parameters of what constitutes evidence.

NOTES

1. When areas of analysis are grouped together into broad categories and variation in temporary mobility analysed through a regression approach, the random variation that arises from a slice-in-time data harvest is likely to even out, at least to a certain extent. The Adjusted R-Squared also provides an indication of the amount of variation at the Indigenous Area level that is explained by each of the models.
2. At the time of writing, there was no publicly available measure of remoteness by IARE. We constructed our own values by identifying the remoteness classification that was most common across the census collection districts within the IARE, weighted by the usual resident population.
3. To smooth out the volatility caused by relatively small population sizes for single year age groups (especially for the Indigenous population), results are presented as a three-year moving average centred at that particular age. For example, the data point for 27 year-olds is the average percentage for 26, 27 and 28 year olds.
4. It should be noted that, because visitors into the area are expressed as a percentage of the usually resident population, it is possible to have values greater than 100.

REFERENCES

- Altman, J.C. 1987. *Hunter-Gatherers Today: An Aboriginal Economy in North Australia*, Australian Institute of Aboriginal Studies, Canberra.
- Beckett, J. 1988. 'Kinship, mobility and community in rural New South Wales', in I. Keen (ed.), *Being Black: Aboriginal Cultures in 'Settled Australia'*, Aboriginal Studies Press, Canberra.
- Bell, M. 2004. *Measuring Temporary Mobility: Dimensions and Issues*, Discussion Paper 2004/01, Queensland Centre for Population Research, School of Geography, Planning and Architecture, The University of Queensland.
- Bell, M. and Brown, D. 2006. 'Who are the visitors? Characteristics of temporary movers in Australia', *Population, Space and Place*, 12: 77–92.
- Bell, M. and Ward, G. 1998. 'Patterns of temporary mobility in Australia: Evidence from the 1991 Census', *Australian Geographical Studies*, 36 (1): 58–81.
- Birdsall, C. 1988. 'All one family', in I. Keen (ed.), *Being Black: Aboriginal Cultures in 'Settled Australia'*, Aboriginal Studies Press, Canberra.
- Brody, H. 2000. *The Other Side of Eden: Hunters, Farmers, and the Shaping of the World*, Douglas & McIntyre, Vancouver.
- Brooks, D. and Kral, I. 2007. Ngaanyatjarra Lands Population Survey, Unpublished Report, Shire of Ngaanyatjarraku, Warburton.
- Burns, J. 2006. Routes and Branches: Residential Mobility among Aboriginal People in Western New South Wales, PhD Thesis, University of New England, Armidale.
- Charles-Edwards, E., Bell, M. and Brown, D. 2008. 'Where people move and when: Temporary population mobility in Australia', *People and Place*, 16 (1): 21–9.
- Commonwealth Grants Commission (CGC). 2007. *Assessing Socio-demographic Composition in the 2010 Review*, CGC 2007/I15-S.
- Cook, T. 1996. 'When ERPs aren't enough – A discussion of issues associated with service population estimation', *Demography Working Paper 96/4*, Catalogue Number 3112.0, Australian Bureau of Statistics, Canberra.
- Coulehan, K. 1995. "'Keeping company" in sickness and in health: Yolngu from Northeast Arnhem Land and medical related transience and migration to Darwin', in G. Robinson (ed.), *Aboriginal Health: Social and Cultural Transitions*, NTU Press, Darwin.
- Finlayson, J. 1991. Don't Depend on Me: Autonomy and Dependence in an Aboriginal Community in Northern Queensland, PhD Thesis, Australian National University, Canberra.
- Foster, D., Mitchell, J., Ulrick, J. and Williams, R. 2005. *Population and Mobility in the Town Camps of Alice Springs*, Report by Tangentyere Council Research Unit, Desert Knowledge Cooperative Research Centre, Alice Springs.
- Gale, F. 1981. 'Adjustments of migrants in cities: Aborigines in Adelaide, Australia', in G. Jones and H. Richter (eds), *Population Mobility and Development: Southeast Asia and the Pacific*, Development Studies Centre Monograph No. 27, ANU, Canberra.
- Hamilton, A. 1987. 'Coming and going: Aboriginal mobility in north-west South Australia, 1970–71', *Records of the South Australian Museum*, 20: 47–57.

- Langton, M. 1981. 'Urbanizing Aborigines: The social scientists' great deception', *Social Alternatives*, 2 (2): 16–22.
- Martin, D. and Taylor, J. 1996. 'Ethnographic perspectives on the enumeration of Aboriginal people in remote Australia', *Journal of the Australian Population Association*, 13 (1): 17–31.
- , Morphy, F., Sanders, W. and Taylor, J. 2002. *Making Sense of the Census: Observations of the 2001 Enumeration in Remote Aboriginal Australia*, CAEPR Research Monograph No. 22, ANU E Press, Canberra, available at <http://epress.anu.edu.au/c22_citation.html>.
- Memmott, P., Long, S., Bell, M., Taylor, J. and Brown, D. 2004. Between places: Indigenous mobility in remote and rural Australia, Positioning Paper, Australian Housing and Urban Research Institute, Melbourne.
- Memmott, P., Long, S. and Thompson, L. 2006. *Indigenous Mobility in Rural and Remote Australia: Final Report*, AHURI Final Report No. 90, Australian Housing and Urban Research Institute, Queensland Research Centre, Brisbane.
- Menage, G. 1998. 'Contested spaces, contested times: The Day of Mourning and protest site', *Public History Review*, 7: 119–39.
- Morphy, F. 2007a. 'Mobility and its consequences: The 2006 enumeration in the north-east Arnhem Land region', in F. Morphy (ed.), *Agency, Contingency and Census Process: Observations of the 2006 Indigenous Enumeration Strategy in Remote Aboriginal Australia*, CAEPR Research Monograph No. 28, ANU E Press, Canberra, available at <http://epress.anu.edu.au/c28_citation.html>.
- 2007b. 'Uncontained subjects: "Population" and "household" in remote Aboriginal Australia', *Journal of Population Research*, 24 (2): 165–84.
- Sanders, W. and Taylor, J. 2007. 'Accommodating agency and contingency: Towards an extended strategy for engagement', in F. Morphy (ed.), *Agency, Contingency and Census Process: Observations of the 2006 Indigenous Enumeration Strategy in Remote Aboriginal Australia*, CAEPR Research Monograph No. 28, ANU E Press, Canberra, available at <http://epress.anu.edu.au/c28_citation.html>.
- Musharbash, Y. 2008. *Yuendumu Everyday: Intimacy, Immediacy and Mobility in a Remote Aboriginal Settlement*, Aboriginal Studies Press, Canberra.
- Newbold, B. 2004. 'Data sources and issues for the analysis of Indigenous peoples' mobility', in J. Taylor and M. Bell (eds), *Population Mobility and Indigenous Peoples of Australasia and North America*, Routledge, London.
- Palmer, K. and Brady, M. 1988. *The Diet and Lifestyle of Aborigines in the Maralinga Region, South Australia*, Maralinga Rehabilitation Studies, Maralinga Tjrtja, Adelaide.
- Peterson, N. 2000. 'An expanding Aboriginal domain: Mobility and the initiation journey', *Oceania*, 70 (3): 205–18.
- 2004. 'Myth of the walkabout: Movement in the Aboriginal domain', in J. Taylor and M. Bell (eds), *Population Mobility and Indigenous Peoples in Australasia and North America*, Routledge, London.
- Prout, S. 2007. Security and Belonging: Reconceptualising Aboriginal Spatial Mobility Processes in Yamatji Country, Western Australia, PhD Thesis, Macquarie University, Sydney.
- 2008a. 'On the move? Indigenous temporary mobility practices in Australia', *CAEPR Working Paper No. 48*, CAEPR, ANU, Canberra, available at <<http://www.anu.edu.au/caepr/working.php>>.

- 2008b. 'The entangled relationship between Indigenous spatiality and government service delivery', *CAEPR Working Paper No. 41*, CAEPR, ANU, Canberra, available at <http://www.anu.edu.au/caepr/working.php>.
- 2009a. 'Policy, practice and the 'revolving classroom door': Examining the relationship between Aboriginal spatiality and the mainstream education system', *Australian Journal of Education*, 53 (1): 39–53.
- 2009b. 'Security and belonging: Reconceptualising Aboriginal spatial mobilities in Yamatji country, Western Australia', *Mobilities*, 4 (2): 177–202.
- forthcoming. 'Vacuums and veils: Engaging with statistically 'invisible' Indigenous population dynamics', *Geographical Research*.
- and Howitt, R. forthcoming. 'Frontier imaginings and subversive Indigenous spatialities', *Journal of Rural Studies*, 25(4).
- Rowley, C. 1971. *Outcasts in White Australia*, Australian National University Press, Canberra.
- Rowse, T. 2000. 'Transforming the notion of the urban Aborigine', *Urban Policy and Research*, (18) 2: 171–90.
- Sansom, B. 1980. *The Camp at Wallaby Cross: Aboriginal Fringe Dwellers in Darwin*, Australian Institute of Aboriginal Studies, Canberra.
- Smith, B. 2000. *Between Places: Aboriginal Decentralisation, Mobility and Territoriality in the Region of Coen, Cape York Peninsula (Australia)*, PhD Thesis, London School of Economics and Political Science, London.
- Smith, B. 2002. 'Decentralisation, population mobility and the CDEP scheme in central Cape York Peninsula', *CAEPR Discussion Paper No. 238*, CAEPR, ANU, Canberra, available at <http://www.anu.edu.au/caepr/discussion.php>.
- 2004. 'The social underpinnings of an "outstation movement" in Cape York Peninsula, Australia', in J. Taylor and M. Bell (eds), *Population Mobility and Indigenous Peoples in Australasia and North America*, Routledge, London.
- Sorin, R. and Ilsoe, R. 2006. 'Moving schools: Antecedents, impact on students and interventions', *Australian Journal of Education*, 50 (3): 227–41.
- Steering Committee for the Review of Government Service Provision. 2007. *Overcoming Indigenous Disadvantage: Key Indicators 2007*, Productivity Commission, Canberra.
- Taylor, J. 1988. 'Aboriginal population mobility and urban development in the Katherine Region', in D. Wade-Marshall and P. Loveday (eds), *Contemporary Issues in Development*, North Australia Research Unit, ANU, Darwin.
- 1992. 'Population mobility: Policy relevance, survey methods and recommendations for data collection', in J.C. Altman (ed.), *A National Survey of Indigenous Australians: Options and Implications*, CAEPR Research Monograph No. 3, CAEPR, ANU, Canberra, available at <http://www.anu.edu.au/caepr/mono.php>.
- 1997. 'A contemporary demography of Indigenous Australians', *Journal of the Australian Population Association*, 14 (1): 77–114.
- 1998. 'Measuring short-term population mobility among Indigenous Australians: Options and implications', *Australian Geographer*, 29 (1): 12–37.

- 2007. 'Whose census? Institutional constraints on the Indigenous Enumeration Strategy at Wadeye', in F. Morphy (ed.), *Agency, Contingency and Census Process: Observations of the 2006 Indigenous Enumeration Strategy in Remote Aboriginal Australia*, CAEPR Research Monograph No. 28, ANU E Press, Canberra, available at <http://epress.anu.edu.au/c28_citation.html>.
- 2008. 'Indigenous peoples and indicators of well-being: Australian perspectives on United Nations Global Frameworks', *Social Indicators Research*, 87 (1): 111–26.
- 2009. 'Indigenous demography and public policy in Australia: Population or peoples?', *Journal of Population Research*, (26) 2, available at <<http://www.springerlink.com/content/d62r50n3gp3423nl/fulltext.pdf>>.
- and Bell, M. 2004. 'Continuity and change in Indigenous Australian population mobility', in J. Taylor and M. Bell (eds), *Population Mobility and Indigenous Peoples in Australasia and North America*, Routledge, London.
- and Biddle, N. 2008. 'Locations of Indigenous population change: What can we say?', *CAEPR Working Paper No. 43*, CAEPR, ANU, Canberra, available at <<http://www.anu.edu.au/caepr/working.php>>.
- Thorburn, K. 2007. 'What sort of town is Fitzroy Crossing? Logistical and boundary problems of the 2006 enumeration in the southern Kimberley', in F. Morphy (ed.), *Agency, Contingency and Census Process: Observations of the 2006 Indigenous Enumeration Strategy in Remote Aboriginal Australia*, CAEPR Research Monograph No. 28, ANU E Press, Canberra, available at <http://epress.anu.edu.au/c28_citation.html>.
- United Nations. 2004. *Report of the Workshop on Data Collection and Disaggregation for Indigenous Peoples*, United Nations Economic and Social Council: Permanent Forum on Indigenous Peoples, E/C 19/2004/2, New York.
- Walter, M. 2004. *Collection and Disaggregation of Data Concerning Indigenous Peoples: An Australian Perspective*, United Nations Workshop on Data Collection and Disaggregation for Indigenous Peoples PFII/2004/WS.1/9, New York.
- Warchivker, I., Tjapangati, T. and Wakerman, J. 2000. 'The turmoil of Aboriginal enumeration: Mobility and service population analysis in a Central Australian community', *Australian and New Zealand Journal of Public Health*, 24 (4): 444–9.
- Young, E. 1990. 'Aboriginal population mobility and service provision: A framework for analysis', in B. Meehan and N. White (eds), *Hunter-gatherer Demography: Past and Present*, Oceania Monograph 39, University of Sydney, Sydney.
- and Doohan, K. 1989. *Mobility for Survival: A Process Analysis of Aboriginal Population Movement in Central Australia*, North Australia Research Unit, ANU, Darwin.