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When Census Night is not a ‘Usual’ Night

*Comparing place of enumeration and place of
usual residence for Indigenous people in the
Northern Territory using 2006 and 2011
Census*

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KEY FINDINGS

- Deficits and surpluses of Indigenous people (the differences between where people were counted on Census night and the places people identified as their 'usual residence') were calculated for numerous locations in the Northern Territory for the 2006 and 2011 censuses.
- Darwin and Alice Springs had the largest net surpluses. While in Darwin the surplus decreased between 2006 and 2011, it increased in Alice Springs, suggesting that Alice Springs became a more popular destination between 2006 and 2011, largely at the expense of Darwin.
- Darwin and Alice Springs were the largest female surplus locations. In Darwin the share of all surplus females decreased from 50% to 34% between 2006 and 2011, in Alice Springs it increased from 25% to 31%.
- In Darwin the share of all surplus young adults decreased from 50% to 25% between 2006 and 2011, while it remained stable in Alice Springs (20% in 2006 and 25% in 2011).
- Almost all infants (aged 0-4 years) away from home were in the urban centres (Darwin, Alice Springs, Katherine, Tennant Creek, and Nhulunbuy) and largely absent from remote communities. This is likely to be related to changing patterns of mobility around childbirth and neonatal health care.
- The locations from where people were absent on Census night changed quite a bit between the two Census, suggesting that while there are consistent broad patterns (remote to urban movement), there are also location specific circumstances that affect the volume of moves from any given community.

RESEARCH AIM

To improve understanding of patterns of temporary mobility of Indigenous people in the Northern Territory through comparison of place of enumeration and usual residence data from 2006 and 2011 Censuses.

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1. BACKGROUND

The lack of reliable data about the spatial distribution of Indigenous people across the Northern Territory presents substantial challenges to the planning and provision of health and community services (Kainz et al 2012). Census data in particular have been criticised for their treatment of Indigenous populations, with high levels of under-enumeration of Indigenous people particularly in more remote areas (Taylor et al 2011) and poor capturing of data about residential migration (long term moves from one residence to another) and mobility (short term moves between locations) (Morphy et al 2007). One contribution that Census data can make to the understanding of the spatial distribution of Indigenous people, but which has not yet been systematically examined for small areas, is the comparison between where people were counted on Census night ('place of enumeration') and places people identified as their 'usual residence' (Biddle and Prout 2009). This data represents at least a snapshot view of the supposed temporary movement of Indigenous people who were either in the Northern Territory on Census night or who usually reside in the Northern Territory. Analysis of these data provides some insights into which locations appear to have surplus of Indigenous people (i.e. which locations have more Indigenous people present on Census night than are usually resident), and which locations appear to have a deficit of Indigenous people (i.e. which locations have fewer Indigenous people present on Census night than are usually resident).

The research is not intended to provide a comprehensive description of short term mobility of Indigenous people across the Northern Territory. It presents a snapshot which is likely to be influenced by the time of the year (see, for example, Bell and Ward's (1998) similar analysis of the distribution of population across Australia from the 1991 Census) broadly, and by specific local conditions which may have applied for that particular night but not for others. Nevertheless, the research does reveal whether patterns were substantially different in 2006 and 2011, and may be of use to those interested in, for example, 'transient' populations visiting larger urban centres (Taylor and Carson 2012), the volatility of populations at particular locations (how variable those populations are likely to be in size and composition), and targeting services to particular mobile populations (such as mothers and infants (Bar Zeev et al 2012), school aged children (Taylor and Dunn 2007), young adults (Biddle and Prout 2009), and older people (Cotter et al 2011)). The research may also contribute to examination of longer term issues such as remote to urban migration (Biddle and Prout 2009), including of Indigenous women (Taylor 2011), and the changing nature of remote settlements. This latter may be particularly interesting in light of the Northern Territory Emergency Response (now 'Stronger Futures' Commonwealth legislation) and Northern Territory Growth Towns initiatives which include differentiated mechanisms of social control and service planning based on where people live (Johns 2008). Locations identified as 'discrete Indigenous communities' have become subject to new restrictions and regulations since mid 2007, and 21 of these communities have been selected as service 'hubs' under the Growth Towns initiative.

2. METHODS

Data were drawn from both the 2006 and 2011 Census. Data used were age, sex, Indigenous status, place of enumeration and place of usual residence. Age classifications used were:

- Infants (0-4 years old)
- Children (0 – 14 years old)
- Young adults (15 – 34 years old)
- Older people (65 years and over)

Surplus and deficits were calculated by subtracting the number of people enumerated from the number of people usually resident. A surplus is a positive response (more people enumerated than usually resident). A deficit is a negative response. Place of enumeration and place of usual residence data were drawn from separate Census databases, meaning that it is not possible to directly assess population 'flows' by identifying how many people were counted in place A but usually resident in place B, as is typically done with Census migration data (see, for example, Carson 2011a and section 3 below). So, for example, the research does not reveal that X many people were counted in Alice Springs but usually resident in Hermannsburg. The data also do not reveal the length of time a person had been away from home or intended to be away from home. Technically, the person's 'usual residence' is that place in which they will live for most of the year, but in practice, the concept measures where people consider is their main residence or 'home', whether their tenure there meets the formal definition or not (Bell and Ward 2000).

For 2006 Census, place of enumeration and place of usual residence were coded to Statistical Local Areas (SLAs). The SLAs for Greater Darwin were combined, as were those for Alice Springs, leaving 51 regions for analysis. For 2011 Census, place of enumeration and place of usual residence were coded to State Suburbs (SSCs). The SSCs for Greater Darwin were combined, as they were for Katherine and for Alice Springs, leaving 117 regions for analysis. We consider these three centres, along with Tennant Creek and Nhulunbuy to be the 'urban' centres of the Northern Territory, because they have the largest usual resident populations, have substantial non-Indigenous populations, have full-service hospitals and high schools, and relatively diverse economies (see Carson, 2011b).

It might be expected that dramatic changes would occur over time because of the small populations of individual locations and the extent to which changed behaviour by just a few people can radically affect population flows at very local levels (Carson et al 2011). Substantial changes in Census geography between 2006 and 2011 also meant that direct comparison (location by location for each Census) was difficult, but broad comparison of trends and volumes has been conducted. For both Census geographies, distinctions were made between 'discrete communities' (locations with relatively concentrated populations) and 'regions' (large areas with very dispersed populations). On the various maps, discrete communities are represented by dots. Each map has the same legend representing net volume of surplus/ deficit. Because deficits tended to be more broadly spread across the Northern Territory (and so generally at lower volumes than surpluses), different scales have been used for deficits and surpluses.

- Deficit of 20 or more
- Deficit of 10 – 19
- Deficit less than 10
- No net surplus/ deficit
- Surplus less than 25
- Surplus 25 – 49
- Surplus of 50 or more

The analysis assumes the Northern Territory to be a closed system – that is, all persons who were away from home on Census night were still in the Northern Territory, and all visitors to locations were from somewhere else in the Northern Territory. In practice, there was likely to be substantial movements to and from Australian states, and even overseas. For example, in 2011, there were 1265 'surplus' people and just 1189 'deficit' people across the Northern Territory. The assumption of a closed system is simply used to allow calculation of proportions of a conceptual population which we define as the sum of surpluses across all locations which experienced surplus.

As with all investigations of the Northern Territory's Indigenous population conducted using Census data, caution must be exercised in interpreting findings. The concept of 'usual residence' remains a problematic one, changes in Census geographies make temporal comparisons difficult, and the 2011 Census was subject to under-enumeration at least as substantial as that (estimated at up to 20% for remote dwelling Indigenous people in the Northern Territory) of the 2006 Census (Australian Bureau of Statistics 2006, Australian Bureau of Statistics 2011). This analysis appreciates the data at face value – we assume that the data that are released are an accurate reflection of the intent of the questions they are based on, and have a sufficient coverage of the population to allow broad conclusions to be drawn.

3. WHAT MIGHT THE FLOWS BE?

Previous analysis of residential migration flows of Indigenous people in the Northern Territory may provide some insight into the specific nature of 'away from home on Census night' flows, given there is literature arguing that the two types of mobility (short term and long term) often have similar spatial patterns for any given population (Gheasi et al 2011, Niedomysl 2005). A previous analysis of 2006 Census data (2011 data of this sort are not yet available) revealed that the typical migration patterns of Indigenous people between 2001 and 2006 were of remote to urban migration. These patterns are represented in two ways in Figures 3a and 3b below –

1. On a map of the Northern Territory, with flows in black lines representing migration to Darwin, green lines representing migration to Alice Springs, yellow lines representing migration to Katherine and Tennant Creek, and blue lines representing migration out of the Northern Territory. Grey lines show migration from one remote location to another. The thickness of lines represents the relative volume of flows.

- As a social network graph using the same colour and line codes as above, but providing a simplified view of the system.

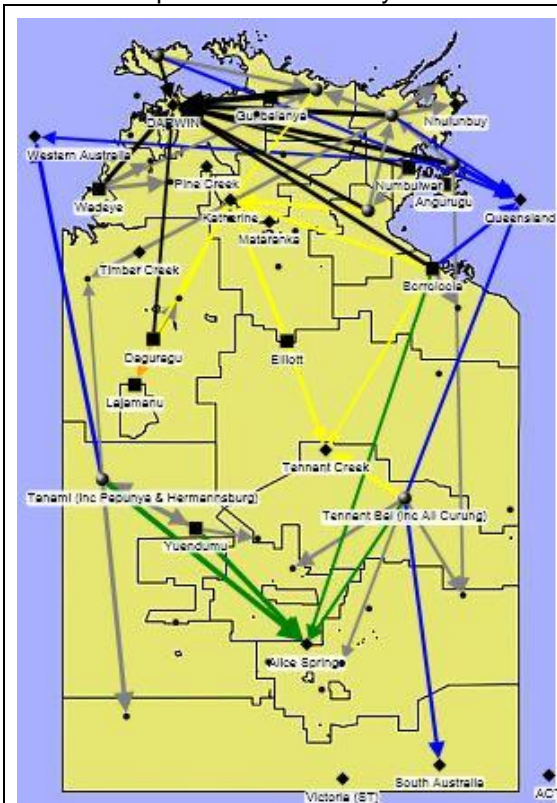


Figure 3a: Migration flows (map) from discrete remote communities to larger urban centres 2001-2006

(2006 Census)

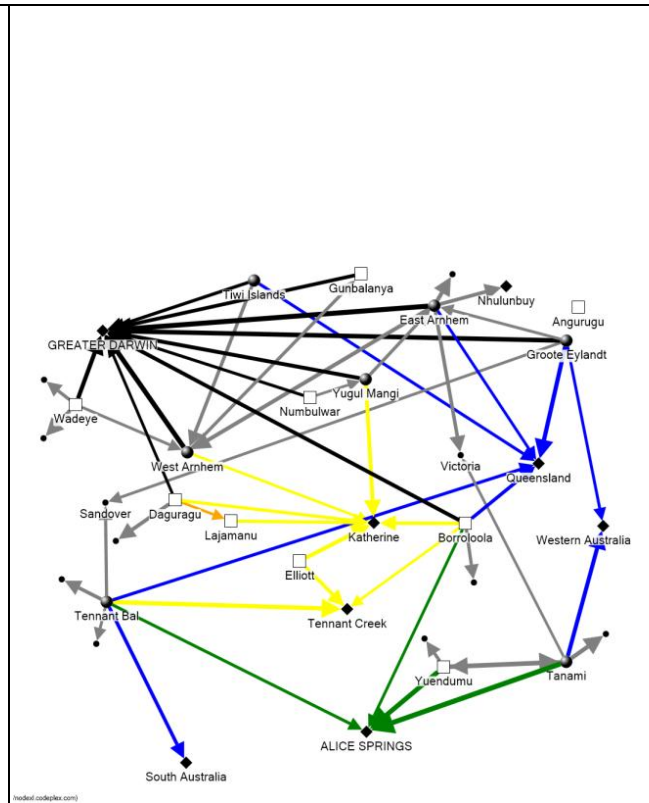


Figure 3b: Migration flows (network graph) from discrete remote communities to larger urban centres 2001-2006

(2006 Census)

What these figures show is fairly well defined catchment areas for Darwin and Alice Springs (just Borroloola sent migrants to both places), and in general a separation of Alice Springs flows from other flows (with just Tennant Creek Balance sending to both Tennant Creek and Alice Springs). There were more shared flows between Darwin and Katherine, and between Katherine and Tennant Creek. In broad terms, then, people away from home on Census night and in Alice Springs would be expected to be largely from Central Australia and perhaps the western parts of the Northern Territory. People in Darwin would be from the Top End, and people in Katherine and Tennant Creek largely from the north and eastern parts of the Territory.

4. ANALYSIS

4.1. Total Population Patterns of Surplus and Deficit

The sum of surplus populations enumerated in 2006 was 1359, representing approximately 2.5% of the Northern Territory's usual resident Indigenous population. The largest net surpluses were in Darwin (698 net surplus, or 51% of the sum of surpluses), Alice Springs (270 or 20%), Katherine (84 or 6%) and Tennant Creek (47 or 3%). These were also the largest locations by usual resident population, but Darwin's share of surplus (51%) was much greater than its share of usual resident population (19%), as was the case in Alice Springs (8% of usual resident population, 20% of surpluses). Other locations where the proportion of surpluses was far greater than the proportion of usual residents included Mataranka (just 0.2% of the usual resident population, but a surplus of 31 representing 2% of surpluses), Coomalie (0.5% of usual resident population and 5% of surpluses), and Nhulunbuy (0.4% of usual resident population and 4% of surpluses).

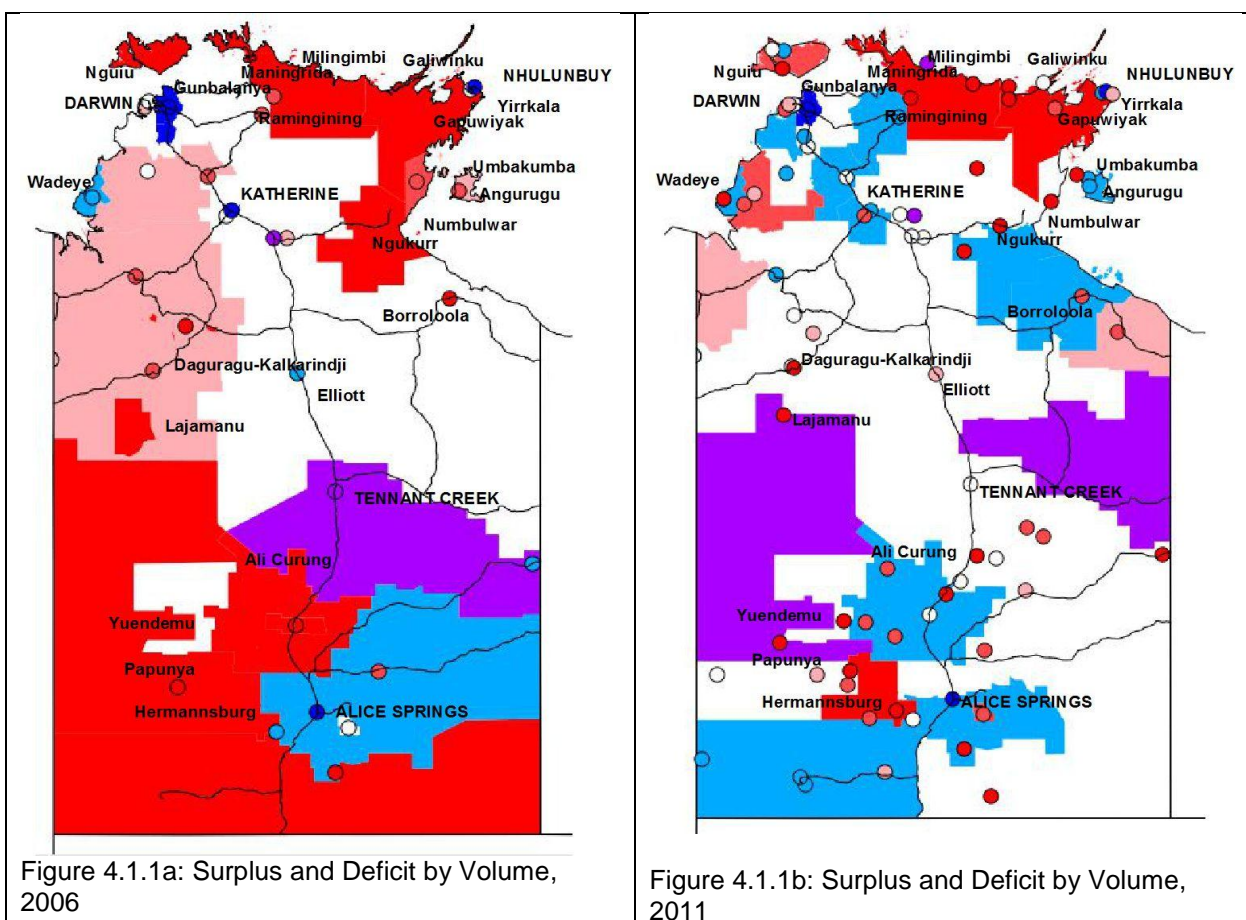
The largest net deficits were from West Arnhem (119 net deficit, or 9% of the sum of surpluses), East Arnhem (111 or 8%), and Tanami (97 or 7%). In comparison, these locations had 6%, 11% and 4% of the usual resident population respectively. In general, the distribution of deficits was much more consistent with the distribution of usual resident population than was the distribution of surpluses.

The sum of surplus populations enumerated in 2011 was 1265, representing about 2.2% of the Northern Territory's usual resident Indigenous population. Largest net surpluses were in Darwin (433 net surplus, 34% of sum of surpluses), Alice Springs (362 or 29%) and Nhulunbuy (52 or 4%). Katherine had a net surplus of just eleven people, and Tennant Creek had no net surplus/ deficit. Once again, Darwin (20% of usual resident population) and Alice Springs (9%) had higher proportions of the surplus population than the usual resident population. The Tanami region again had a relatively high net surplus (27 people) compared with its usual resident population (just 26 people).

The largest net deficits in 2011 were from East Arnhem (91 people or 7% of sum of surpluses), Wurrumayanga in the Tiwi Islands (59 people or 5%) and Papunya (47 people or 4%). In comparison, these locations had 3%, 2% and 0.7% of the usual resident population respectively. Otherwise, the share of net deficits was consistent with the share of usual resident population.

For the 2006 Census, only eight of the 21 Northern Territory Growth Towns were also SLAs. Of these eight, Wadeye had a net surplus of 29 people, Elliott of 6 people, and Yuendumu had no net surplus/ deficit. The remainder all had net deficits of 15 to 20 people. In 2011, none of the 18 Growth Towns that were also state suburbs had a net surplus (Wadeye had a net deficit of 39 people and Elliott had no net surplus/ deficit).

Figures 4.1.1a and 4.1.1b describe the spatial distribution of net surpluses and deficits across the Northern Territory for 2006 and 2011. The most notable changes are an increase in net surpluses and a decrease in net deficits in the centre and south of the Northern Territory. This change did not occur in discrete communities.



4.2. Male and Female Patterns

The sum of surpluses in 2006 included 651 males and 762 females, a sex ratio of 85 males for every 100 females. However, across the eight places where there were relatively large surpluses (25 or more people), there were 563 males and 717 females, representing a sex ratio of just 78. Darwin contained about half of the sum of surpluses of females, and Alice Springs contained about one quarter. The next most populous location was Katherine with just 6% of the sum of surplus females (45 in total). The distribution of surplus males among these larger centres was similar (meaning fewer total males compared with females). However, locations which had relatively large net deficits (20 people or more) tended to lose similar volumes of males and females (a net deficit of about 390 males and females across 13 locations). The largest net deficits of females were in East Arnhem (63 people or 8% of the sum of surpluses), West Arnhem (51 people, 7%), and Tanami, Petermann, and Yugul Mangi (Ngukurr region) with about 6% of the sum of surpluses.

What this implies is that locations with relatively small net deficits (less than 20 people in total) tended to have high deficits of females compared to males. For example, Yuendumu had a net surplus of 12 males, but a net deficit of 12 females. Arltarlpilta had a net surplus of 2 males and a net deficit of 20 females. There were no substantial examples of locations with larger deficits of males compared with females.

In 2011, the sum of surpluses included 557 males and 781 females, giving a sex ratio of 71 males for every 100 females. There were seven locations which had net surpluses of 25 or more people, and collectively they had 372 surplus males and 594 surplus females, giving a sex ratio of just 63. The largest female surplus locations were Darwin (268 people or 34% of the sum of surplus females) and Alice Springs (242 or 31%) with the next largest being Nhulunbuy at just 4%. In comparison, the 25 locations which had net deficits of 20 or more people had deficits of 346 males and 512 females, with a sex ratio of 68. This implies a more even balance of male and female surplus/deficit in locations with smaller overall surplus/deficits. An exception was Tanami, with a net surplus of 28 males and a net deficit of 1 female.

Figures 4.2.1a and 4.2.1b compare the spatial distribution of surplus and deficit for males and females in 2011. Of note are male surpluses in regions in the central and south west. In contrast, patterns in discrete communities (including Northern Territory Growth Towns) were quite similar.

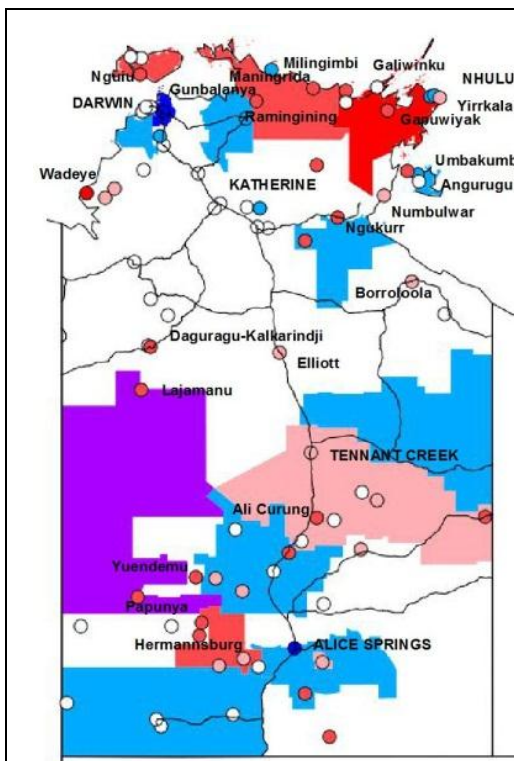


Figure 4.1.1a: Surplus and Deficit of Males by Volume, 2011

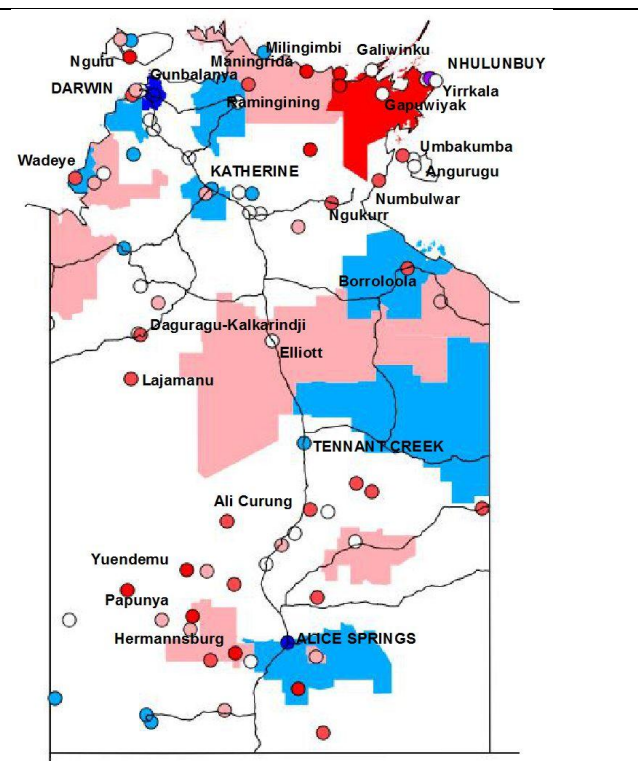


Figure 4.1.1b: Surplus and Deficit of Females by Volume, 2011

4.3. Age Specific Patterns

4.3.1. Infants (0-4 years old) and children (0-14 years old)

There was a sum of surpluses of 150 infants in 2006, with Darwin having a net surplus of 60 (40% of the sum of surpluses), Tennant Creek 11, Katherine 9, and Alice Springs 8. West Arnhem had a net deficit of 23 infants (15% of the sum of surpluses), Tanami 21, Petermann 16, East Arnhem 12, and Yugul Mangi 10. Generally, there were surpluses of infants mostly in locations with overall surpluses, and deficits of infants in places with overall deficits. Surplus infants accounted for about 10% of surplus populations, with Tennant Creek standing out as an exception where one third of the surplus population could be accounted for by surplus infants. At the other end of the scale, Petermann, Tanami and West Arnhem had about one quarter of their net deficit explained by deficit of infants.

There was a strong positive correlation (0.93) between surplus and deficit of infants and of children. On average, infants represented about 25% of children (as either surplus or deficit). A notable exception was Alice Springs with a surplus of just 8 infants but 86 children. In contrast, surplus infants accounted for virtually all surplus children in East Arnhem, Tennant Creek and Tennant Creek Balance.

There was also a sum of surpluses of 150 infants in 2011. However, Darwin had a net surplus of just four, while Alice Springs had a net surplus of 39 (5% of sum of surpluses), and Nhulunbuy and Katherine had 15 each. Milingimbi had a net deficit of 12 infants, and East Arnhem and Wadeye a net deficit of 8 infants. An additional 46 locations had deficits of one or two infants. The relationship between size of infant surplus/ deficit and size of child surplus/ deficit observed in 2006 was not apparent in 2011 (correlation less than 0.6). For example, Katherine had a surplus of infants (15) but a deficit of children (22). Nhulunbuy's infant surplus (15) accounted for virtually all of its child surplus (19). Alice Springs' infant surplus was 40% of its child surplus, but Darwin's infant surplus was just 3% of its child surplus.

4.3.2. Young Adults (15-34 years old)

The sum of surpluses of young adults in 2006 was 507. More than half this sum (266 people) could be accounted for by the surplus in Darwin, and a further 20% by the surplus in Alice Springs (94 people). No other location had more than 6% of the sum of surpluses. The volume of net deficits was very consistent across those locations with net deficits. East Arnhem had a net deficit of 59 people (12% of the sum of surpluses), but then there were a dozen locations with net deficits equivalent to about 4-6% of the sum of surpluses. Overall, larger places had larger net deficits or surpluses (correlation of 0.68 between size of surplus/ deficit and size of usual resident population). Larger urban places experienced larger surpluses, and larger remote areas experienced larger deficits. An exception to the remote/ urban rule was Wadeye, which is a relatively large remote location (about 2000 people) which experienced a surplus of 13 young adults in 2006. Elliott also experienced a net surplus (10 people) despite being remote and relatively small in terms of usual resident population (350 people).

The sum of surpluses of young adults in 2011 was 459. The spatial distribution of surpluses and deficits was somewhat different to 2006 (see Figures 4.3.2a and 4.3.2b), particularly in Central Australia where a number of remote areas had surpluses. The more substantial change was a decline in the proportion of the surplus accounted for by Darwin (which had just 99 surplus young adults or 22% of the sum of surpluses), and an increase in the surplus in Alice Springs (122 people or 27% of the sum of surpluses). There were net deficits in all but two of the 18 Northern Territory Growth Towns that were SSCs in 2011, with just Numbulwar (surplus of 5) and Angurugu (5) as exceptions. Wadeye had a net deficit of 25 young adults, compared to its net surplus of 13 in 2006. Lajamanu (19), Yuendumu (17) and Hermannsburg (16) also had substantial net deficits. These discrete communities particularly stand out because much of the surrounding regions had net surpluses.

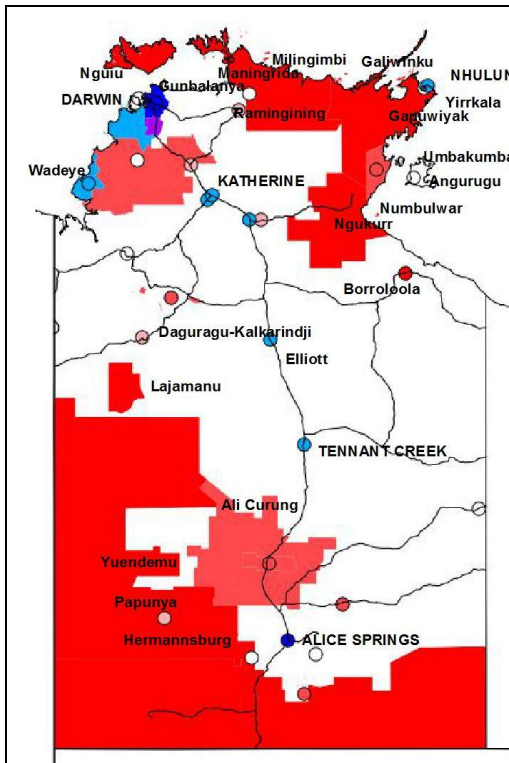


Figure 4.3.2a: Surplus and Deficit of Young Adults by Volume, 2006

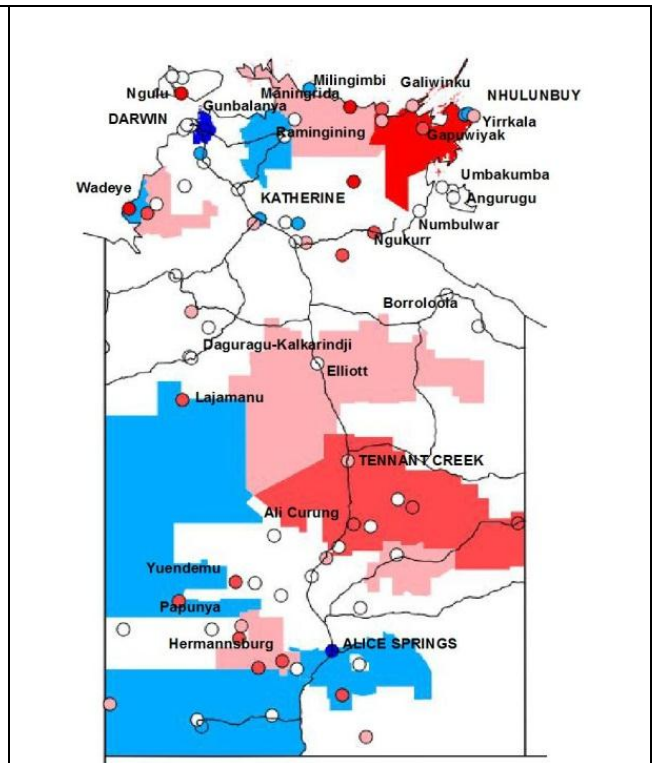


Figure 4.3.2a: Surplus and Deficit of Young Adults by Volume, 2011

4.3.3. Older People (65 years and over)

In both 2006 (75) and 2011 (119) there were very small sums of surpluses of older people, and regional patterns were hard to distinguish. Darwin (25% of sum of surpluses in 2006 and 33% in 2011) and Alice Springs (28% and 24%) dominated net surpluses, but net deficits were very small and dispersed across the Territory.

5. DISCUSSION

The broad pattern of temporary mobility of Indigenous people in the Northern Territory, at least as reflected in comparison of place of enumeration and usual residence data from 2006 and 2011 Census, continues to be from smaller, more remote areas into the larger urban centres. Darwin and Alice Springs particularly dominate the locations which receive a net surplus of non-residents. While temporal comparisons are difficult for the reasons described in the Methods section, it does appear that Alice Springs became a more popular destination between 2006 and 2011, largely at the expense of Darwin. If this observation is matched to the migration flows patterns described in section 5 above, then it may be presumed that more people from remote areas in Central Australia were away from home on Census night 2011 than Census night 2006. While this may be the case, it is interesting to note that absences were almost entirely from discrete communities (including all Northern Territory Growth Towns which could be identified), with some Central Australian regions actually having a surplus of enumerated population in 2011 which was not apparent in 2006.

The pattern of remote discrete communities having a deficit of enumerated populations while some surrounding regions have surpluses was also apparent in more northern parts of the Northern Territory in 2011 but not in 2006. Increased regulation of life in discrete Indigenous communities between 2006 and 2011 might partially explain both moves to large urban centres and to very remote regions. One specific example may be the ‘flipping’ of Wadeye (a Northern Territory Growth Town) from a surplus of 13 young adults in 2006 to a deficit of 25 young adults in 2011.

Far more women than men were away from home on Census night both in 2006 and 2011. The comparison of spatial distribution of surplus and deficit for 2011 shows many similarities, but also a male preference for regional areas in the central west where there were not surplus women. Overall, women appear to be more concentrated than men in the larger urban centres, which is a pattern consistent with the idea of 'female flight' from remote areas (Taylor 2011). There is also some indication that the sex ratio (males to females) of people away from home on Census night declined, which may further support the 'mobile females' hypothesis.

One reason for increased temporary mobility of women is the need to travel to major urban centres for childbirth and some types of neonatal care (Bar Zeev et al 2012). It was certainly the case that almost all infants (aged 0-4 years) away from home were in the urban centres with maternity services (Darwin, Alice Springs, Katherine, Tennant Creek, and Nhulunbuy) and largely absent from remote communities. What was interesting, however, was the dramatic shift in destination preference from Darwin in 2006 (nearly half of all 'surplus' infants were in Darwin and just 5% in Alice Springs) to Alice Springs in 2011 (27% in Alice Springs and less than two per cent in Darwin). Katherine and Nhulunbuy also became more common destinations for infants. The apparent break down of the relationship between surplus/ deficit of infants and surplus/ deficit of children experienced in 2006 but not in 2011 is also interesting. Some places (Katherine and Nhulunbuy in particular) attracted infants but not children, while others (with Darwin the stand out) attracted children but not infants. This may reflect changing patterns of mobility around childbirth, neonatal health care, and schooling which require further investigation.

This shift away from Darwin noted for infants was also noted for young adults (aged 15-34 years), even as the spatial concentration of surpluses for this age group stayed very much focused on Darwin and Alice Springs. In 2006, about half of the estimated young adult population away from home was in Darwin, and about 20% in Alice Springs. In 2011 it was about 25% for Alice Springs and just 20% for Darwin. There is no immediate explanation for why Alice Springs became a more attractive destination for this population during the period, but it must be remembered that we report here on NET surplus/ deficit of population. So it may have been that similar numbers of people were away from home in Darwin (for example) in 2011 and 2006, but that more Darwin residents were away from home in 2011.

We might expect the volumes of older (65 years and over) people away from home to increase as that population increases, and we may expect the existing flow from remote to urban to continue at least partially because of the common need to go to urban centres for health care.

The location specific changes observed between 2006 and 2011 may not require explanation beyond the dynamic nature of this form of mobility, and of remote populations generally (Carson et al 2011). Nevertheless, it will be important to extend this research to look for explanations for some of the apparent spatial changes –

- Increased preference of particular population groups for Alice Springs (and more broadly away from Darwin),
- Emergence of surplus populations in very remote areas, and
- Changing nature of temporary mobility to and from Northern Territory Growth Towns.

The patterns observed in a particular location on any one night may be specific to that place and that night. For example, the case of the Tanami region, which had net deficits of males and females in 2006 but a net surplus of males in 2011 may be evidence of a ceremony taking place on country in 2011. On the other hand, the patterns may be symptomatic of a more persisting trend (the attractiveness of some locations compared with others). While we have some confidence labelling the broad patterns as trends, the results for individual locations are founded on diverse circumstances and require location specific explanations.

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