

# POPULATION STUDIES RESEARCH BRIEF

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## Demographic Change, Katherine, and Cyclone Les

### KEY FINDINGS

- Katherine is the third largest urban centre in the NT with a population around 10,000 people (Darwin conurbation including Palmerston and surrounds is about 120 000; Alice Springs is about 25 000);
- Major changes in the size and composition of the Katherine population occurred between the 1996 and 2001 Census, and can be attributed to the impacts of flooding caused by Cyclone Les in January 1998;
- Following strong population growth in the 1970s and 1980s, the population declined by 15% between 1996 and 2001 and has not recovered substantially since;
- Population change included a large decline in people aged 15-44 years, an ageing of the population, and an increase in the proportion of the population who identify as Indigenous;
- These changes are quite different to those observed in Darwin around Cyclone Tracy, and suggest different development paths for the towns;
- Katherine has potential for long term growth arising from the variety of economic activity there and its favourable geographic location.

### RESEARCH AIM

To examine recent demographic change in the town of Katherine, with a particular focus on the 1996 and 2001 Census which bracketed floods caused by Cyclone Les (January 1998). Some comparison is made with changes in Darwin around Cyclone Tracy (December 1974).

This research brief draws on data from the Census of Population and Housing provided by the Australian Bureau of Statistics. The study is part of a program of demographic research funded in part by the Northern Territory Treasury.

The research has been conducted by Associate Professor Dean Carson.

## Background

The Katherine region has been home for the Jawoyn Aboriginal people for many thousands of years, and more recently has seen an influx of other populations associated with the development of transport, communications, defence, agriculture, mining and tourism industries in the Northern Territory. Katherine came into being as a formally gazetted town in 1926, and settlement since then has concentrated on a small patch of land primarily on the south side of the Katherine River, but also with some development on the north bank. The Katherine River is flood prone, and the town has experienced substantial flood events in 1957, 1974, 1998 and 2006. The best documented of these events was the January 1998 floods which saw the town declared a national disaster area and a large proportion of residents evacuated. At the time, Katherine was estimated to have a population in excess of nine thousand people. By the 2001 Census, the population was closer to 7 000, and there has only been modest growth since.

Figure 1- The main street of Katherine during the 1998 floods



Source: [http://www.ourterritory.com/Katherine\\_NT/katherine\\_flood.htm](http://www.ourterritory.com/Katherine_NT/katherine_flood.htm)

The effects of the 1998 flooding (caused by rain from Cyclone Les) have been documented in a number of academic research papers, most notably work by Allan and Kristen Skertchly (1999; 2000a; 2000b). Some work has also been done specifically around impacts on the tourism industry (Faulkner and Vikulov, 2001; Ritchie, 2004; 2008). In essence, the previous studies have focused on the process of response to the disaster, the psychological impacts, and the industrial/economic challenges associated with 'recovery'. What is clear from the literature is that the 1998 floods caused a major setback in the economic and social development of Katherine, and that 'recovery' has been a slow process. A scan of recent newspaper articles about Katherine highlights ongoing concerns about lack of employment (particularly for Aboriginal people), lack of growth, closing of businesses, and what would be termed in academic research a loss of 'social capital' (Macbeth, Carson and Northcote, 2005).

The changing demography of Katherine as a result of floods has only rated a passing mention in the literature so far. It is acknowledged that the town experienced an immediate decline in population, but there has been no real discussion of who left or who has since returned or arrived. This research brief addresses those issues. There has also not been any comparison of the demographic experiences of Katherine around the 1998 floods or with its experiences of floods before or since, or with other natural disasters in that part of the Northern Territory. Comparing the demographic impacts of major natural disasters for communities over time is an important topic of research. Human responses to natural disasters can inform planning and interventions for rebuilding and recovering social and economic capacity. This research brief does a small amount of this work by comparing the broad patterns of demographic change experienced by Katherine since Cyclone Les in 1998 with those in Darwin after Cyclone Tracy in 1976. Ultimately, some insights as to why different places at different times might react in similar or different ways are provided. This is an exploratory research brief, with more detailed work to follow.

## Methods

Data were drawn from the 1996, 2001, and 2006 Census for the Urban Centre of Katherine. Data of particular interest were age, sex, Indigenous status, labour force status, and industry of employment. Data were also drawn from 1971, 1976, 1981, 1986, and 1991 Census - simply number of people enumerated in the Urban Centre as an indicator of rate of population growth over that time. Migration data (place of usual residence at Census time and place of usual residence one year or five years previously) were not used because of the effect of high turnover of defence force staff - each five years, Katherine loses (and regains) over 3000 people, many of whom are associated with the Tindal Air Force Base - making analysis of migration data for the remaining population very difficult. Migration patterns instead can be imputed from differences in population (age/sex) structures between Census.

Data about the impacts of Cyclone Tracy were drawn from the 1971 and 1976 Census for the Urban Centre of Darwin. Data included age, sex and Indigenous status, but were not readily available for labour force status or industry of employment.

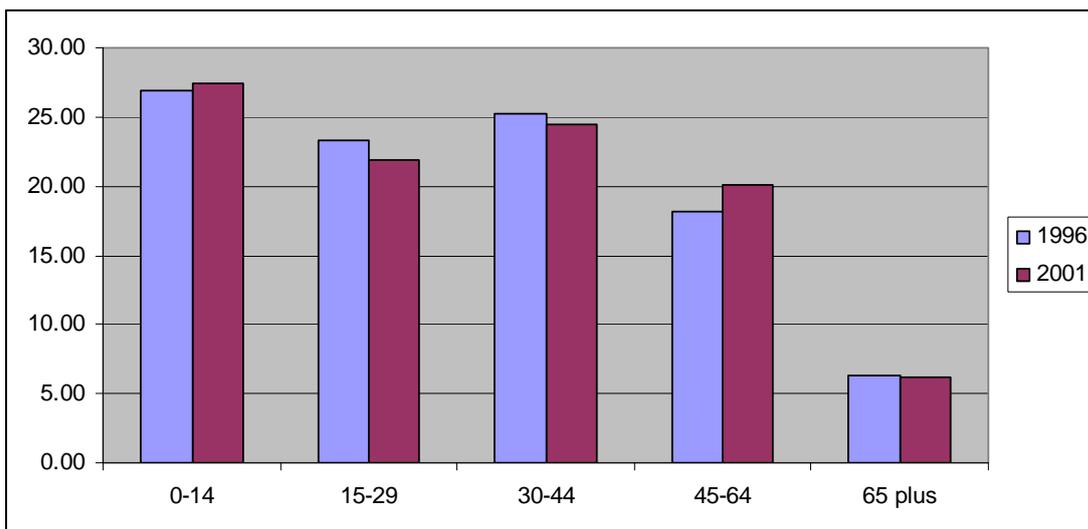
## Results

Katherine experienced substantial and sustained population growth right through the 1970s and 1980s. The town nearly doubled in size in the late 1980s with the establishment of a long term Air Force base at Tindal on the south-east outskirts of the town. At the 1971 Census there were 2 500 people counted in Katherine. By the 1986 Census there were 5 500 people, and by 1996 there were over 7 500 people counted and an estimated resident population (including those 'missed' by the Census) approaching or exceeding 9 000 people. The 1996 population was nearly 20% Indigenous. It had a relatively young age structure, with 27% aged 0-14 years and just 6% aged 65 years and older. Katherine had a very high sex ratio in 1996 of 108 males for every 100 females. Some of this may be attributed to the large defence force presence, but there were other 'male' industries providing employment in the town as well. Public administration and defence was the highest employer at 23% of the working population, followed by health services at 11%, retail at 8%, accommodation at 8%, and construction at 6%. Agriculture (3%), mining (4%), and manufacturing (4%) employment were also notable. At the time, all of these sectors had high proportions of male employment, except health services which had just 30 males employed for every 100 females.

By 2001, the employment profile had changed dramatically. Mining (down 80%) and manufacturing (down 45%) were hardest hit, along with public administration and defence (down 7%). Agriculture and accommodation were steady, but both had declined by 2006. Between 1996 and 2001, jobs shifted towards transport (up 38% - but from a very low base), health services (up 18%), and education services (up 10%). While the former continued to employ three times as many males as females, the latter two had up to five times as many females as males.

Not surprisingly, then, a very substantial change in the demography of Katherine between 1996 and 2001 was a fall in the sex ratio from 108 males for every 100 females to 101 males for every 100 females. The age distribution of the town also changed (see Figure 1). The town saw a decline in the proportion of people aged 15-29 years (late education and career establishment ages) and 30-44 years (early career ages). There was a compensating increase in the proportion of people aged 45-64 years (late career ages). Furthermore, in real terms, there was a decline in the actual number of people aged under 45 years enumerated in the town. Some of this may be accounted for by differences in Census coverage, but the declines were substantial enough (400 fewer people aged 15-29 years, for example) to suspect a real outmigration effect. The deficit in the younger age groups has persisted to the 2006 Census.

Figure 1: Age Distribution of the Katherine Population, 1996 and 2001 Census

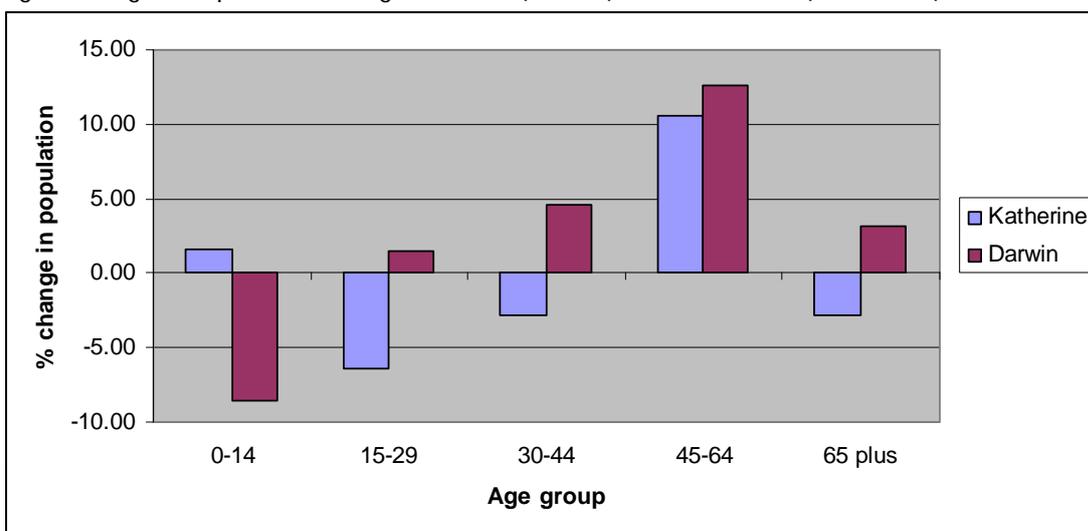


The slight increase in the proportion of children (aged 0-14 years) may be accounted for by the increase in the proportion of town residents who identified as Indigenous. In 1996, 18% did so, but by 2001 the proportion was nearly 25% (26% in 2006). This was accompanied by a 2% increase in the number of Indigenous children in the population, compensating for a 1.5% decrease in non-Indigenous children.

By 2001, Indigenous people made up a far higher percentage of all those aged 15-44 years (from about 9% of the population in 1996 to about 13% in 2001).

The experience of Katherine around Cyclone Les (measured by the 1996 and 2001 Census) can be contrasted with that of Darwin around Cyclone Tracy (as measured by the 1971 and 1976 Census). Most obviously, the Darwin population had recovered to pre-cyclone numbers within two years, while recovery of the Katherine population has taken at least 10 years since Cyclone Les. The population structures at the subsequent Census, however, shows both towns had increased the proportion of 45-64 year olds, but in all other age groups, the direction of change was contrasted between Katherine and Darwin. In the latter, its proportion of career establishment (15-29 year olds) and early career (30-44 year olds) had increased, while these declined in Katherine. Darwin had a reduced share of children (0-14 year olds), while Katherine had a slightly increased proportion (Figure 2).

Figure 2: Age Composition Changes Darwin (1971-6) and Katherine (1996-2001)



Meanwhile Darwin's sex ratio increased from 117 in 1971 to 121 in 1976 while Katherine's declined from 108 to 101 between 1996 and 2001. The proportion of the Darwin population

which identified as Indigenous decreased marginally from 7% to 6% between 1971 and 1976 while the Indigenous population in Katherine grew from 18% to 25% between 1996 and 2001.

### Discussion

It has already been established in the literature that the 1998 floods had a devastating effect on the size of the population of Katherine, and that recovery in that sense has been very slow. What we have established here is that population decline targeted specific groups - non-Indigenous, male, in career establishment and early career age groups. Population growth since 2001 has been more focused on Indigenous people (including families with young children) and women. Private sector economic activity slowed in terms of employment, and there was a shift towards public sector employment especially in health and education. The exodus of young working age males likely affected private sectors like mining and agriculture and in this respect the shift to public sector is not surprising. The increased presence of Indigenous people, many of whom were children, and fewer of whom were engaged in employment than the non-Indigenous population, increased the demand for health, education and other government services. That the private sector (with the exception of a short term increase in construction linked to the physical rebuilding) has failed to recover lost ground might be a result of timing - there have been declines in mining, agriculture, and tourism employment activity in the Northern Territory generally since the late 1990s.

In contrast to Katherine, Darwin's experience after Cyclone Tracy was an influx of non-Indigenous males in career establishment and early career ages. The data on industry of employment was not available for this research brief, but much of the rapid recovery experienced by Darwin may be attributable to the much larger scale of the rebuilding effort, and the coincidental timing of the move to self government (completed in 1978) and the build up of government administrative jobs in the preceding period.

This research brief focuses on the demographic experiences of Katherine and Cyclone Les, but it also provides insights into the study of 'disaster recovery' in the Northern Territory. The nature of the demographic impact and recovery paths can be influenced by starting conditions - the size of the town, the makeup of its established economy, its historical significance within the broader region and so on. Impact can also be influenced by the timing of the disaster event - other exogenous economic events, its timing in relation to the structure of the labour force (rates of Indigenous participation, average age when entering the workforce, female participation and so on), and its timing re political events. It is very difficult to predict what might happen the next time major flooding hits Katherine, or the next time a cyclone hits Darwin, without detailed knowledge of the economic, social, and political conditions likely to be in force at the time.

### Conclusion: what might the future hold for Katherine?

The extant literature and this research brief can be interpreted as offering a vision of a bleak future for Katherine - loss of the entrepreneurial class, failure to recover, the onset of additional shocks, and so on. There are, however, positive signs for the future of Katherine that arise from its geographical position, its workforce restructuring since 1998, and the legacy of its previous economic composition. Katherine remains one of the more economically diverse towns (in terms of industries) in the Northern Territory despite the declines in mining, agriculture, and tourism. The residual human capital in these sectors (and in manufacturing and transport), and the associated built infrastructure, provides a foundation for either revitalising these industries or moving into new ventures in the future. Katherine is not just a 'government town' and with new entrepreneurial thinking and an appropriate geographic focus, it has the potential to re-emerge as a major regional centre for private sector activity.

The 'appropriate geographic focus' is likely to be first towards the rest of the Northern Territory rather than towards Darwin and on to export markets. There is not space in this research brief to explain the economic modelling behind this argument, but essentially the thinking is that Katherine is better placed than either Darwin or Alice Springs to access regional NT. It is well placed on the (admittedly limited) road network, and its population profile is more similar to that of the regions rather than of Darwin. At the same time, it is close enough to Darwin to benefit from knowledge and other 'spillovers' and the access to markets that occur within 'heartland/ hinterland' geographies (McCann, 1987). If Katherine can see the

remainder of the NT as a market for privately produced goods and services rather than as a population simply demanding government services (or as a disconnected population), then new industries are capable of emerging from the existing infrastructure.

Outside the private sector, the restructuring of employment around education and health services offers Katherine the opportunity to act as a regional hub. The town is likely to have developed expertise that is suited to conditions in regional NT (and other remote areas) because of its geographic location and because it has had sufficient size to bring through a wealth of different experiences and capabilities in health and education trainers and staff. There is a PhD research project currently underway within the Population and Tourism Studies Group looking at these issues and the potential in the health sector.

Finally, Katherine has a level of physical amenity (a climate not as harsh as many other NT locales, access to the river, access to Kakadu, the Daly River region, rural living opportunities and so on) that have been acknowledged as important in attracting the Tindal air base, and can serve as a lever for attracting new residents. Many towns survive and thrive despite regular flood events, and they do so because of the amenity is the lifestyle offers to residents. The challenge is to invest in a Katherine that can become one of these towns by exploiting its locational advantage and its legacy of economic diversity and capacity to manage growth.

#### References

- Faulkner, B. and Vikulov, S. (2001), "Katherine, washed out one day, back on track the next: A post-mortem of a tourism disaster *Tourism Management*", *Tourism Management*, Vol. 22 No. 4, pp. 331-44.
- Macbeth, J., Carson, D. and Northcote, J. (2005), "Social capital, tourism and regional development: SPCC as a basis for innovation and sustainability", *Current Issues in Tourism*, Vol. 7 No. 6, pp. 502-22.
- McCann, L.D. (1987), *Heartland and Hinterland: geography of Canada*. Prentice Hall, New Jersey.
- Ritchie, B.W. (2004), "Chaos, crises and disasters: a strategic approach to crisis management in the tourism industry", *Tourism Management*, Vol. 25 No. 6, pp. 669-83.
- Ritchie, B.W. (2008), "Tourism disaster planning and management: from response and recovery to reduction and readiness", *Current Issues in Tourism*, Vol. 11 No. 4, pp. 315-48.
- Skertchly, A. and Skertchly, K. (1999), "The Katherine-Daly Flood Disaster 1998", *Australian Journal of Emergency Management*, Vol. 14 No. 1, pp. 31-36.
- Skertchly, A. and Skertchly, K. (2000a), "Human Aspects of the Katherine-Daly Flood Disaster ", *Australian Journal of Emergency Management*, Vol. 15 No. 1, pp. 47-52.
- Skertchly, A. and Skertchly, K. (2000b), "Traditional Aboriginal knowledge and sustained human survival in the face of severe natural hazards in the Australian monsoon region: some lessons from the past for today and tomorrow", *Australian Journal of Emergency Management*, Vol. 14 No. 4, pp. 42-50.