The 'Big Factors' Affecting Demographic Change and Wellbeing at Territory Growth Towns

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1. BACKGROUND

A range of policies are in place for improving service delivery and community wellbeing in remote Indigenous communities in the Northern Territory (NT). The Northern Territory Government's *Working Future* policy is notable. Its aim is "...government and local people working together to make our towns and communities better places to live" (Northern Territory Government, 2012a). It dovetails with the Council of Australian Government's (COAG) *National Indigenous Reform Agreement* in shifting the basis of remote service delivery towards a hub and spoke model of Aboriginal communities in the NT.

The key plank of *Working Futures* has been to identify 20 of the largest communities as "Growth Towns" (hubs) where:

> Our biggest remote communities will become proper towns, with services, buildings and facilities like any other country town in Australia. These towns will become the economic and service delivery centres for their regions. (Northern Territory Government, 2012b)

The Reform Agreement meanwhile provides additional layers of policy and aspirations. It focuses on seven areas of individual and social wellbeing (called 'building blocks'):

- Early childhood
- Schooling
- Health
- Economic participation
- Healthy homes
- Safe communities
- Governance and leadership

Each of these are supported by at least one national partnership agreement, like the *NTG Remote Learning Partnerships* (between 15 growth towns and the NT government) under the schooling initiative and the *Closing the Gap in Indigenous Health Outcomes National Partnership Agreement* (between the Australian Government and each State and Territory Government) within the health initiative.

The Territory Growth Towns (TGTs) approach represents a paradigm shift in the approach to developing and delivering infrastructure and services in remote areas. New mechanisms for establishing needs and coordinating strategies for addressing them have been established and related activities like the development of Local (service) Implementation Plans are taking place such that the processes applied to developing TGTs reflects the local context and hence localised needs. Part of this process is ensuring that local demographic conditions (age and sex structure of the population, degree of mobility into and out of the community etc.) are considered in the planning process. In turn, implementation of various strategies is likely to influence demographic change in and around TGTs. Previous research has identified the demographic diversity which exists between Aboriginal communities in the NT (Carson et al., 2011) and there is a growing stock of literature which reveals their divergent 'pasts', and their complex cultural and social histories and contemporary demographic landscape (Taylor, 2011). On this basis, we might expect policies to have diverse short and medium term impacts across TGTs for the demographic components of change (especially migration and fertility). The aim of our research is to investigate these impacts at very local levels (Growth Towns, networks of towns and outstations etc.).

2. THE RESEARCH APPROACH

Our research partnership with the Northern Territory Department of Housing, Local Government and Regional Services (in conjunction with Northern Territory Treasury) involves developing and applying holistic ideas and perspectives about the main factors which might influence demographic change in and around TGTs in coming years. The process involves several elements which might collectively be described as harnessing existing knowledge on small settlements, developed by or for 'external' sources (as codified knowledge - policies, data, reports, modelling techniques and so on) and held by communities (as tacit knowledge) as the basis for modelling scenarios about future population change.

The initial task, which is the focus of this brief, was to filter and sift through potential demographic influences using external sources to identify those which might be most immediate and most influential (the 'big factors'). The purpose for developing perspectives about big factors was threefold:

1. To use as inputs to scenario modelling on their demographic impacts using Agent Based Modelling (ABM – more to follow) as the technique.

2. To share the big factors and the results of ABM modelling with communities as a means of discovering and communicating their perspectives on the causes and consequences of population change.

3. To work with communities to find out and articulate what 'outsiders' do not know and do not understand in relation to population change at and around TGTs, now and into the future.

ABM holds particular promise as a tool for modelling demographic change in small settlements because it allows for 'dynamic' and iterative modelling. The demographic effects from one scenario (or factor) are supplied to the model as inputs to the starting conditions for modelling subsequent scenarios and/or as starting conditions for modelling of subsequent years. It's dynamic 'updating' of the population according to individual behaviours enables fine grained assessments about future population change. Conversely, deterministic models like cohort component modelling tend to apply and (consequently) deliver demographic change in a linear fashion in order to generate future population structures and compositions. These eliminate the possibility for 'random' human behaviour (which exists in all population systems) and the emergence of new change agents over time to be fed back into the modelling process.

In our research, the ABM initially provides a vehicle for recording and illustrating the expectations that outsiders have about how remote Indigenous community populations are changing and might change in the future. It can then serve as resources around which discussions about these issues can take place within communities and between the researchers and communities. Communities can redirect the vehicle according to internal understandings of change and diversity (how their responses to big factors might differ from the responses of other places). This application of ABM for the cross-fertilisation of tacit and codified knowledge has not been attempted previously. Instead, ABM has typically been applied to very formal and academic research questions and in very structured ways; almost exclusively using codified information (data) and excluding incorporation of tacit knowledge. As a result, the outputs from ABM in the field of demographic research tend to appeal to academic audiences. By contrast, the focus of this research partnership is to co-develop knowledge with communities in order to garner deeper community-based understandings of what it all means for the future.

3. IDENTIFYING THE BIG FACTORS

Determining in advance the likely demographic impacts of policy in remote areas and for small and diverse communities is problematic. Nevertheless, Carson et al. (2011) have developed a framework for understanding why this is the case. The 'Seven D's of Remote Demography' encapsulated the factors which distinguish the processes of demographic change for remote populations in developed nations.

More recently, the 'Seven Ds' have been upgraded to the 'Eight D's':
- **Disconnected** - Sparsely populated areas are poorly incorporated into core-periphery systems which drive labour and capital flows in the Australian economy. While rural areas (the periphery), for example, tend to source the majority of labour from capital cities, labour mobility to and from remote locations is far more chaotic and varied (see Carson, 2011a). This makes it difficult to predict how 'hubs and spokes' might operate in remote areas.

- **Discontiguous** – Most sparsely populated areas in Australia and other developed nations were colonised opportunistically (for example, to address strategic military concerns, through mining and resource exploitation, or as transport hubs). Combined with large distances between populated locations, this has seen remote areas develop with weak connections between individual settlements. We can't assume, for example, that neighbouring settlements will borrow ideas and practices from one another. Transport links tend to be weak and economic development is approached unsystematically.

- **Diverse** – Sparsely populated areas tend to have 'polarised' rather than 'fragmented' populations, making 'averages' meaningless. This can be illustrated by, for example, levels of population turnover which are both extremely high and extremely low in remote areas. Modelling and projecting change using top-down models (the traditional demographic tools and methods)

assumes that there is something similar about all people in a particular place – you can use the average rates of fertility, migration etc to model that place. But the NT is so diverse and population's characteristics so polarised that 'average' is not a useful statistics (see Koch & Carson, 2012). Diversity is not just about the differences between Indigenous and non-Indigenous populations – there is tremendous diversity within Indigenous populations as well.

- **Dynamic** – history demonstrates that populations and human activity systems can change very quickly in sparsely populated areas, sometimes as a result of 'black swan' events (shocks such as extreme weather events, for example) and sometimes for no apparent single reason. The sex ratio for Alice Springs, for example, has changed dramatically in recent times. Modelling and forecasting population changes is challenging under these circumstances (see Taylor, 2011) where 'trends' as well as 'averages' are often meaningless.

- **Detailed** – the detailed composition of remote populations means that it might only take a limited exposure to risk and an exposure by just a few people to have a large population impact. For example, 3 young women in a community deciding to go to university might have major impacts on that community (in terms of migration patterns, changes in age/ sex structure, future impacts on fertility rates and so on). Likewise the 'trend' of older workers migrating to remote areas in northern Australia for short term, 'end of career' contract work emerged from the initial behaviour of just a few dozen people. There is also the issue of clustering, as we have some evidence in terms of youth suicide. For these reasons, it means no risk factor should be considered too marginal to warrant consideration as a force for changing the nature of remote settlements (Martell, 2012).

- **Dependent** – Remote communities are highly subject to influences from 'the outside'. Increased surveillance by government is one example of dependence of remote areas on the decisions made by outsiders. Remote areas are also often seen as places to be exploited by large multi-national companies (e.g. Mining companies) and as attractive 'laboratories' for social experiments by academics, NGOs and policy makers. All of these factors reduce the capacity for local decision making, and make it more difficult to model demographic change simply based on knowledge about the internal workings of a settlement (Carson, 2011b).

- **Distant** – the distance between remote communities and between these and urban centres emphasises that each settlement may be exposed to different risks and respond in different ways. It also means that the relationships between settlements are loose at best. Over time sparsely populated areas become more isolated from human activity systems as new technologies require greater 'economies of scale' to implement. For example, transport and communication systems used to need to traverse sparsely populated areas to connect urban centres. This is no longer the case (Carson & Cleary, 2010). The result is that populations in remote areas become less like more rural and regional populations (in terms of adoption of new trends) over time.

- **Delicate** – Sparsely populated areas attract disproportionate levels of (usually government) surveillance of their human activity systems. As a result, remote communities can try and conceal weaknesses in the systems to prevent further intervention from outside agents. The value of interventions can also be exaggerated to justify the increased government attention. This means that not all scenarios in relation to future populations there are particularly palatable to the various interests involved (governments, researchers, community leaders and so on). There is a whole range of under-researched demographic issues in the NT – Aboriginal outmigration from 'traditional country', how child sex abuse changes reproductive behaviour, the demographic impacts of mixed marriages and interactions between Indigenous and non-Indigenous residents of remote settlements amongst others (see Taylor & Carson, 2009; Taylor et al., 2011a).

In thinking about the demographic futures of TGTs, the Eight Ds provide both a filter for ideas on what transitions might occur and a tool for anticipating the effects of policy and other factors on populations and their wellbeing. Quite naturally there exist a wide range of views about what might be the 'big factors' in this domain. The table below is structured according to demographic components of change and identifies some general factors observed around the World in the context of 'demographic transitions'.

Table 1 – Existing understanding on relationships between specific policies and demographic change

FERTILITY	MORTALITY	IN-MIGRATION	OUT-MIGRATION
• Increased employment opportunities for women outside the home ↓ • Increased access to education for men and women ↓ • Policy incentives encouraging having children ↑	• Improved access to health care ↓ • Changes in diet ↓↑ • Safer living technologies ↓	• Perceptions of increased employment/ wealth opportunities ↓↑ • 'bonded'employment arrangements ↑	• Closure of critical public infrastructure ↑ • Increased access to education ↑ • Home ownership ↑

Of course there are many more general and localised observances which might be plausible and many of them have impacts across more than one of the components of change. Consequently there is a need for more specific understanding about what the 'big factors' might be in the context of the TGTs and how they might affect demographic change in specific communities. Our longer term research aim is to use this knowledge about 'big factors' to model the future demographic pathways of individual communities and regional populations. To generate and test ideas about the big factors which are likely to influence the demography of Growth Towns in coming years, The Northern Institute hosted a workshop in May 2011. Researchers engaged in population research at Charles Darwin University were joined by Northern Territory Treasury economic and social analysis specialists and a researcher from Umea University (in Sweden) who has extensive experience examining demographic impacts from policy interventions for the Sami people in northern Europe.

4. SOME BIG FACTORS

Changing housing tenure – The group articulated a number of demographic impacts which might result from changing housing tenure in Growth Towns. It was proposed that moves to increase home ownership levels could affect rates of in and out migration, household sizes and fertility rates.

For migration, increased home ownership is likely to make Growth Towns more 'sticky' for home owners in terms of residential migration. This may reduce rates of urbanisation for Indigenous people in the Territory, although it was noted that having a 'taste' for home ownership might promote purchasing outside of the community for some. Increased home ownership rates were seen as likely to reduce household sizes, all else being equal because home owners have the imprimatur to select the number occupants. Equally, patterns and volumes of short-term mobility may be affected through home ownership if those who are transient through Growth Towns have reduced accommodation options through home owners exercising their rights to determine who stays at the property. One researcher recounted their experience at a large Growth Town where a resident said that the first thing he would do when he bought his house was to put up a fence to keep away people he did not want to come and stay. Equally, some home owners may feel their obligations to family and friends are extended by their property rights over the dwelling, which might lead to increased household sizes in some cases.

However, the evolution of this and its relationship to migration will be determined by a range of other factors at Growth Towns. In particular, the extent to which household sizes will be reduced will depend in part on the availability of alternative housing stock for those who are 'kicked out' of their current lodgings. In line with this, programs of land release were seen as interconnected with changing housing tenure and efforts to reduce overcrowding, an ongoing issue for individual wellbeing.

Non-maintenance of outstations – although this may not align with the intentions of *Working Futures* it was perceived that the policy involves a cessation of funding for maintaining infrastructure and services to outstations. A critical issue was transport services – considered as a key to maintaining wellbeing. Changes to passenger air services to remote towns in the NT were raised as examples of transport

related barriers to accessing services, visiting family and overall wellbeing. Indeed improving systems of regional transport was itself suggested as being vital to the economic and social development of Growth Towns in coming years. Overall it was felt that any demographic impacts from the changing preferences to residing at outstations would be highly localised and dependent on the role these played in the demographic system previously. Key factors were suggested as:

- Length of establishment of the outstation;
- Who typically resides there;
- How consistently they are occupied;
- What their service status and infrastructure was prior to *Working Futures*;
- How much influence they might have politically on future funding decisions.

External investments in mining and resources – this factor was raised for both its potential as a source of employment and income and for the impacts it can have in perpetuating situations of 'haves and have not's' in remote areas (where little in the way of economic attributions are retained locally (Taylor et al., 2011b). Nevertheless, it was recognised that families in some Growth Towns receive royalties directly and that there is an emerging move to ensure some of these are placed in trusts for furthering educational, employment and economic engagement into the future.

Remote area workforce developments – remote areas are becoming increasingly dependent on non-resident workforces and this is impacting on the demography and wellbeing of communities (in positive and negative ways). The obvious example is the growth in fly-in-fly-out workforces associated with the mining industry, but in the Territory it is likely that the public administration (essentially government) FIFO workforce is at least as big and is having more widespread impacts AND more significant impacts at the localised level (mine sites are often located away from communities (see our research brief on The Northern Territory's Non-resident Workforce). The big question raised was the extent to which local workforces could be developed to fill positions which would otherwise be filled by non-resident workers.

Another consequence of the presence of non-resident workers in remote areas is the increased 'risk' of mixed partnerships forming between local (largely Indigenous) residents and visiting (largely non-Indigenous) workers. Mixed partnering has far reaching and major implications for the future size of the Indigenous population, its fertility profile, consequences for migration, and implications for changing (almost overnight) the socio-economic status of the Indigenous partner in the relationship. In more than 90% of cases where a child is born to a mixed partnership where the mother is Indigenous, the baby is declared on the birth certificate as Indigenous.

Structural changes to regional economies – many regional economies in the NT have transitioned from male dominated industries (and therefore working age populations) to a more balanced or even female dominated composition. Alice Springs has been the perfect example where private sector employment has fallen sharply but jobs growth in female dominated service industries (health, NGOs etc) have grown. The sex ratio for Alice Springs has 'flipped' from male to female dominated in recent years (and over a very short period of time). More specifically for employment at Growth Towns - while there are continued efforts to garner payments for environmental services as well as to secure jobs and incomes through fishing and bush foods, the real jobs growth has been in non-professional roles in the services sector (Carson & McConnell, 2011). Many of these jobs are done by women, with evidence of decreasing employment opportunities for men in many communities.

Changes to CDEP – the decision to roll back CDEP programs in an effort to create 'real jobs' was seen to be a major factor for the wellbeing of Growth Town residents in the near term. The links between this and other factors were recognised, for example, service sector and mining jobs might help transition people previously on CDEP but to date there is little evidence of success of these strategies.

The National Broadband Network and technology developments – given recent research (for example, Taylor, 2012) on technology adoption at Aboriginal communities demonstrated very high rates of uptake and use (especially of mobile phones) the group recognised the opportunities which further investments into higher speed and bandwidth infrastructure under the NBN program might create. These relate not only to economic opportunities but also enhanced connections to networks and individuals outside of the community. This will increase information flows and the potential for social and economic innovation exchanges (and population exchange) between Growth Towns and from Growth Towns to elsewhere.

E-health and e-education – in line with technology improvements expected to be delivered through the NBN and other developments the move to e-health and e-education could bring major improvements over time to overall health and wellbeing. Apart from the primary health benefits of rapid and accurate diagnosis and treatment for individuals, there may be benefits for the health system more broadly. One area is the recruitment and retention of health professionals. The Tele-health system deployed in Canada, for example, has reduced staff turnover at remote Indigenous communities because staff feel less isolated and can receive training in situ (thus reducing the feeling of 'falling behind' in their career by being in an isolated and remote area). On the other hand, continuing social, cultural, and economic barriers to technology adoption, and the inferior service available in remote areas (the 'technological distance' between remote and other populations will actually increase with the NBN) may lead to poorer health outcomes than hoped and stimulate increased outmigration for health service access (Kainz, T., Carson, D.A., & Carson, D.B., 2012).

Localised cultural effects –change and development at many Growth Towns will continue to be influenced strongly by local cultural structures, norms and conditions. The ability of the community to adapt to change and deal productively with issues like alcohol management and policies 'from the outside' (like *Working Futures*, the NTER and its successor 'Stronger Futures') may ultimately depend on local cultural and social capital and the resilience they engender. It was suggested that the capacity for Growth Towns to deal well with change can be highly dependent on a few individuals and that brings particular risks.

5. IMPLICATIONS FOR DEMOGRAPHIC MODELLING

We can expect each of the big factors to impact in some way on the demographic components of change at individual TGTs. Table 2 attempts to summarise the likely direction for individual components of population change from the big factors identified here. It proposes that, for many factors, impacts may be uni-directional. For example, increasing rates of private home ownership at one community might 'crowd out' renters and encourage some to migrate elsewhere. Conversely, the opportunity to become a home purchaser at their original community of residence might encourage some who are living away from the community to migrate back.

Table 2 - Big factor impacts on the components of population change from big factor impacts

FERTILITY	MORTALITY	IN-MIGRATION	OUT-MIGRATION
• Non-maintenance of outstations ↓↑	• Non-maintenance of outstations ↓↑	• Non-maintenance of outstations ↑	• Non-maintenance of outstations ↓
• Changing housing tenure ↓↑	• Localised cultural effects ↓↑	• Structural changes to regional economies ↓↑	• Changing housing tenure ↓↑
• Structural changes to regional economies ↓		• Changing housing tenure ↓↑	• Structural changes to regional economies ↓↑
• Remote area workforce developments ↓↑		• External investments in mining and resources ↓↑	• External investments in mining and resources
• The NBN and technology developments ↓		• Remote area workforce developments ↓↑	• Remote area workforce developments ↓↑
• E-health and e-education ↓		• The NBN and technology developments↑	• Changes to CDEP ↓↑
• Localised cultural effects ↓↑			• The NBN and technology developments ↑

The range of big factors discussed at the workshop and the uni-directional impacts they might have on the demographic components of change are demonstrative of the complex inter-connectedness between cause and effect with regards to localised changes over time. Firstly, TGTs are commencing from a

diverse set of baseline conditions – demographically, economically and socially. Secondly, it is not inherently clear how the emergence of one of the big factors will cause or affect other big factors. For example, increased local engagement in the regional workforce might not encourage greater levels of home ownership at Growth Towns. This is because at least some part of the (previously) local resident workforce might choose to become FIFO and thereby forego home ownership at Growth Towns (this effect was noted in remote Alaskan Indigenous communities when local mining employment opportunities led to outmigration to urban centres by the Indigenous workers who wanted to have the same work patterns (FIFO) as their non-Indigenous colleagues). Nevertheless, we can expect ABM to provide clues about these issues and how they might play out because it can accommodate uni-directional and non-linear impacts over time.

6. CONCLUSION

This brief has demonstrated that there are many obstacles and uncertainties in the development of accurate knowledge about the future demography of remote Indigenous communities (including the Territory Growth Towns and settlements on their 'spokes'). While a range of data exists about starting conditions (age and sex structures, levels of population mobility etc), very little research work has been published which articulates the relationships between policy, demographic change and wellbeing (economic and social) at and around individual remote Aboriginal settlements AND between these and other settlements. Considering how each big factor might play out in terms of components of change (for example, changing home ownership rates) demonstrates this.

What we do learn from the Eight D's is that change will be different in each community, and will be the result of what is happening outside as well as inside communities. Change is not 'predictable', but our approach to this research (agent based modelling) allows us to explore a large set of potential changes – so we do not conclude with what 'will be', but with what 'might be possible'. By bringing together knowledge from outside (which is the foundation of this research brief) and knowledge from inside communities to explore demographic possibilities, we aim to provide Indigenous communities with enhanced capacity to engage in decision making. That capacity will come from better methods to demonstrate the uniqueness of each community, and its vulnerability to particular types of (positive and negative) change that our research can help link directly to 'big factors'.

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