Anangu population dynamics and future growth in Uluru-Kata Tjuta National Park

J. Taylor

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Dr John Taylor is a Senior Fellow and Deputy Director of the Centre for Aboriginal Economic Policy Research, The Australian National University.

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Abbreviations and acronyms

ABS	Australian Bureau of Statistics
AGPS	Australian Government Publishing Service
AIAS	Australian Institute of Aboriginal Studies (now AIATSIS)
AIATSIS	Australian Institute of Aboriginal and Torres Strait Islander Studies
ANPWS	Australian National Parks and Wildlife Service (now PAN)
ANU	The Australian National University
AP	Anangu Pitjantjatjara (Lands)
ASGC	Australian Standard Geographical Classification
ATSIC	Aboriginal and Torres Strait Islander Commission
CAEPR	Centre for Aboriginal Economic Policy Research (ANU)
CBR	Crude Birth Rate
CDEP	Community Development Employment Projects (scheme)
CDR	Crude Death Rate
CHINS	Community Housing and Infrastructure Needs Survey
CIAS	Community Information Access System
DEWRSB	Department of Employment, Workplace Relations and Small Business (Commonwealth)
ERP	Estimated Resident Population
NARU	North Australia Research Unit (ANU)
NPY	Ngaanyatjarra-Pitjantjatjara-Yakunytjatjara (Women's Council)
PAN	Parks Australia North
SLA	Statistical Local Area

Summary

The population of Mutitjulu has grown substantially and at a rate above the regional average since the community was established in 1985. There have been several counts of the population since then, and five of these are presented in sequence to chart the growth in numbers. Overall, they indicate an increase in the usually resident population from 140 in 1986 to 385 in 2000. This represents an annual rate of growth of 12.5 per cent, which is far above the rate of 3.1 per cent per annum recorded for the wider central Australian region.

Mathematical projection

The first set of projections involves a simple continuation of population trends observed since 1985. They are generated to provide an initial sense of the possible range of future population sizes. A further reason is that, anecdotally, one scenario proposed for Mutitjulu is exponential growth. Mathematical projections provide a measure of what this would entail numerically. These estimates are very crude as they fail to account for the effects of changing age structure on population growth and the manner in which this influences other demographic processes such as fertility and mortality.

Projection based on share of regional growth

The second (main) projection attempts to measure how birth rates, death rates, migration, and age structure might affect the future population size of Mutitjulu. This is done by projecting the population of the wider region to which Mutitjulu is socially, culturally and economically linked, and then by allocating a share of this future regional population to Mutitjulu. The region selected for this purpose approximates that serviced by the Ngaanyatjarra-Pitjantjatjara-Yankunytjatjara (NPY) Women's Council.

Estimating the future population of Mutitjulu using this method thus involves a two-stage process:

- the population of the NPY region is projected in five-year stages to 2021 using a cohort component method;
- then, the future population of Mutitjulu is derived as a percentage share of the regional population. This procedure is based on the assumption that the historic trend in Mutitjulu's share of the regional population will continue.

Two sets of projections are developed for the NPY region—a high series and a low series. The former assumes that fertility levels will remain constant, the latter that fertility will decline. No change is envisaged in the level of mortality, while migration into the region is assumed to be counterbalanced by migration out of the region.

Projection results

Mathematical

The mathematical projections produce two estimates of population size in 2021:

- a population of 763, if the average annual increment observed since 1985 continues (arithmetic growth);
- a population of 1,755, if the numbers added to the population each year increase in compound fashion (geometric or exponential growth).

However, because exponential growth is rarely achieved, it would be unusual indeed if the future population of Mutitjulu approached the higher estimate. It is presented simply to identify an absolute upper limit of probability.

Mutitjulu share of regional growth

The cohort component projections for the NPY region indicate, for the high series, a population rising from 4,909 in 1996 to 6,942 in 2021; for the low series, they indicate a population rising from 4,909 in 1996 to 6,601 by 2021.

The Mutitjulu population is then calculated as a percentage share of these regional estimates. In 2000, the population at Mutitjulu represented 7.4 per cent of the NPY region, by 2021 it is estimated to represent 12.9 per cent. This produces a high series population of 893 by 2021 and a low series figure of 849. The variation in projected populations is deliberately calculated to be limited because of the high degree of uncertainty surrounding much of the demographic data.

Factors supporting a growing share of regional population at Mutitjulu

These factors include:

- the continued emergence of the community as a regional centre;
- ongoing expansion of tourism;
- the related prospect of further economic development and associated employment and income-generating opportunities for Anangu (Aboriginal people); and
- continuing infrastructural developments, especially housing.

Factors that may limit continued expansion

These factors are less obvious but stem largely from the overwhelming evidence about the growth experience of other settlements across central Australia. There appears to be a ceiling on the size of Aboriginal communities in central Australia at around the 500 population level. This may result from the tendency for smaller, more politically cohesive residential groupings to break away from overcrowded centralised settlements with their attendant social pathologies, and set up smaller outlying settlements, or outstations.

Interpretation

Over the next 20 years it is possible to envisage a number of factors that are likely to encourage further population growth, but it is equally the case that the effect of these might be dampened by other factors which limit continued expansion. When these factors are considered, the population range of between 850 and 890 projected for Mutitjulu by 2021 appears likely to represent a ceiling on future numbers rather than being a step within an ever-rising level. Certainly, it is difficult to envisage Mutitjulu (or any other Aboriginal community in the region) growing to a point where it represents much beyond 13 per cent of the regional population.

Acknowledgments

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Introduction

In August 2000, the Parks Australia North (PAN) division of Environment Australia commissioned the Centre for Aboriginal Economic Policy Research at the Australian National University to conduct an analysis of population dynamics in the Mutitjulu community, in order to project its future population growth to the year 2021. The purpose was to facilitate community planning, and the key objective, as specified in the terms of reference, was to provide the best possible estimates of the likely size and structure of Mutitjulu community's Anangu (Aboriginal) population in the years 2006, 2011, 2016, and 2021. In fulfilment of that objective, it was considered necessary to establish the key factors underlying the population dynamics of the community, and to ascertain the community's own views of these dynamics. It was also necessary to model the current and future structure of the population, in particular age structures and the structure of existing 'family groups'; to assess the relevance of available statistics on the last 15 years of Mutitjulu community population growth; and to establish the key determinants of future population growth.

Assessment of the quantum of need in remote Aboriginal communities for government-funded works and services has been generally facilitated by population data from the five-yearly Census of Population and Housing as well as from sporadic surveys. This means that there are long intervals between data collection, and that outputs are typically dated by the time they are made publicly available. However, these lags are only a hindrance if community populations are rapidly expanding (or declining) in size, or if the characteristics of the population vary substantially over time. Remote Aboriginal community populations often do, in fact, display rapid changes in size (partly because of their initial relatively small size) and this can lead to marked shifts in their composition—for example, in terms of age distribution. There is a need, therefore, to acquire greater understanding of the dynamics of community populations and to consider alternative means of monitoring and planning for population change.

In some instances formal arrangements are in place to monitor shifts in the population size of communities on a more regular basis. For example, in the Northern Territory the Local Grants Commission develops annual population estimates for incorporated Community Government Council Areas (Northern Territory Grants Commission 1999), while annual environmental health surveys, conducted in most communities of the Northern Territory by the Department of Local Government in conjunction with Territory Health Services, include an assessment of population numbers that are then entered on the Community Information Access System (CIAS) maintained by the Department of Local Government (Runcie & Bailie 2000). However, collections such as these provide only 'guestimates' of population size (usually from key informants), with no indication of other essential demographic features, such as age and sex. This is similar to population estimates provided by the Community Housing and Infrastructure Needs Survey (CHINS).

This reliance on demographic information that is either dated or deficient creates a sense of uncertainty for planning in remote communities. In particular, policy is typically reactive to needs as they become revealed (for example, in terms of post facto responses to housing shortages), as opposed to being proactive in seeking to anticipate and plan for expected requirements. Being proactive requires a measure of future requirements for government works and services, something that is only rarely achieved at the level of Aboriginal communities (Taylor 1990). This is not the case generally in the rest of Australia, where the approach to settlement planning is much more prospective. For example, State and local government planning authorities routinely develop future scenarios and often seek budgetary allocations on the basis of anticipated needs. A key element in this process is the production of small area population projections or forecasts. While the Australian Bureau of Statistics (ABS) provides official projections of State and Territory populations, the individual States and Territories, in turn, produce regional and local area projections, often down to the Local Government Area level (Bell 1992; Commonwealth of Australia 1997).

Thus, in 2000, when PAN, the agency responsible for Park management, was faced with contemplating the service delivery implications of rapid Anangu population growth within Uluru-Kata Tjuta National Park, it was following best practice in seeking to comprehend the dynamics of population change. This was seen as a necessary prerequisite to projecting likely future numbers and demographic composition. The Anangu living within the Park are, essentially, the population resident at Mutitjulu, and this paper presents a projection methodology and set of estimates for this population for the period 2000–21. In demonstrating the possibilities for such analysis, as well as the limitations, this exercise has relevance beyond the dynamics of one community and its region and may inform planning for discrete communities generally across remote Australia.

Anangu settlement at Mutitjulu

While Aboriginal people have occupied and visited the site of Uluru for millennia, it is only since the 1970s that a contemporary Anangu settlement can be said to have existed in the vicinity. A number of detailed and authoritative histories of Anangu presence in the area are available, particularly for the period after World War II (Altman 1988; Australian National Parks and Wildlife Service (ANPWS) 1991; Harney 1969; Layton 1986; Toohey 1980). In terms of settlement evolution, the salient facts are as follows. In 1972, the Docker River Social Club opened the Ininti Store at the tourist facility near the eastern edge of Uluru, and this became the nucleus of an ongoing Anangu presence. In 1973, the House of Representatives Standing Committee on Environment and Conservation visited Uluru, as well as Mimili, Ernabella, and Docker River, to seek the opinion of people associated with Uluru regarding plans for the development of the National Park. One consequence of this was the establishment of an official Aboriginal camping area at Bore 29, close to the tourist area. At this time, the resident population resembled an urban fringe camp. It was small (averaging around 30 people) and was made up largely of older people.

By 1974, a list of senior men linked to Uluru and Kata Tjuta had been drawn up in preparation for the Uluru Land Claim process, although the formal proceedings did not commence until 1979. In the meantime, the growing involvement of Anangu in the management of the Park's affairs was manifest in the construction of housing for Anangu close to Ininti store and garage. The handing over of title to the area of Uluru-Kata Tjuta to traditional owners took longer still, finally occurring, by special statute, in 1985. Under this statute, the relevant organisation cited in the lease-back arrangements between traditional owners and the Commonwealth for the purposes of managing Uluru-Kata Tjuta National Park, was, and remains, Mutitjulu Community Inc.

Over this same period, long-discussed plans to move the tourist site to a new resort area at Yulara were activated, and relocation took place gradually between 1983 and 1986. By 1986, all the motels in the park had been demolished and the Mutitjulu community was formally established around what remained of the tourist site. According to three household surveys conducted in different months during 1985 and 1986 (with independent corroboration from the 1986 Census count), the population usually resident there at this time averaged 140 (Altman 1987, 1988; ANPWS 1991). These initial counts of the Mutitjulu population form the base from which a projection of growth to 2021 can be constructed.

Population growth at Mutitjulu, 1986–2000

Over the 15 years since the title deeds of Uluru-Kata Tjuta National Park were transferred to Anangu, the population usually resident at Mutitjulu has almost trebled. From the available data, it appears that the rate of increase was slower over the first decade and more rapid in recent years, since 1996. These observations are based on five separate counts of the population. Two of these counts (in 1991 and 1996) were conducted by the ABS as part of the national Census of Population and Housing. The remaining three counts (in 1986, 1998 and 2000) were conducted variously under the auspices of the Mutitjulu Community Council and the ANPWS, now PAN. Short-term mobility is high at all times among Mutitjulu residents, and it is fortunate that all of these counts were conducted at similar times of the year (between June and August) so that seasonal effects, should they exist, are minimised.

Which population?

It should be noted that social gatherings in Mutitjulu can draw large groups of people (over 1,000) from all over the central Australian region for periods of up to a week or longer. Such gatherings are a feature of social and economic life in most communities in the region. However, Mutitjulu has a drawcard of its own in the form of the annual distribution of National Park rent and gate monies by the Central Land Council towards the end of each calendar year. Because a large proportion of traditional owners to whom payments are made are residents of Mutitjulu this event attracts a substantial gathering of extended family members. Less predictable influxes are also experienced due to events associated with the

role of Uluru as a national icon. The most recent of these was the commencement of the Olympic torch relay and related sporting activities. Aside from this, proximity to the township of Yulara is an ever-present attraction to Anangu from across the region who are seeking to make temporary use of urban facilities.

Such peaks in population numbers raise questions about which is the most appropriate population to use for the planning of essential services (Taylor 1998). In statistical circles, discussion of this issue has centred around the notion of how best to estimate a 'service population' (ABS 1996: 12; Warchivker, Tjapangati & Wakerman 1999). This concept arises out of the fact that estimates of usual resident population often fail to account for the use of local services and infrastructure by non-residents. In general, government agencies have expressed an interest in having service population estimates to assist in policy and planning activities as well as in calculating costs associated with service provision (ABS 1996: 9). However, much work remains to be done in standardising the definition of a service population and in establishing methodologies for measurement. The population counts presented for here Mutitjulu more closely describe 'usually resident populations'. In all probability these fall below 'service population' levels; however, they do include individuals who consider themselves as residents of another community but spend extended periods of time in both—a phenomenon described for Aboriginal communities across central Australia (Warchivker, Tjapangati & Wakerman 1999; Young & Doohan 1989).

Methodological consistency in population counts

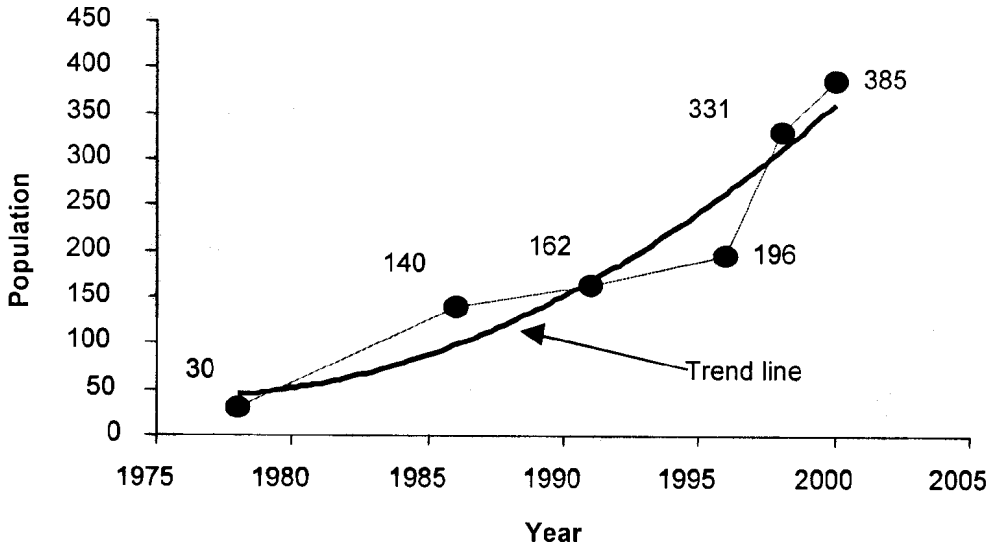
Before considering the trend in population growth revealed by various enumerations, it is important to assess their consistency in terms of the methodologies applied. As far as can be ascertained, the ABS Census counts in 1991 and 1996 were derived from interviews at each dwelling to establish the names, age, and sex of each person present within family groups. The instruction to census collectors was to ensure that all children and babies were included as well as all people who live at Mutitjulu most of the time (defined as more than 6 months of the year) but who happened to be absent at the time of the enumeration. Individuals who were visiting temporarily and whose usual place of residence was, by definition, elsewhere were excluded.

Of the three other (non-ABS) counts, the first, in 1986, actually comprised several counts conducted in June, August, and September. These also followed the method of developing lists of family groups in each dwelling. They revealed a fluctuation in the resident population ranging from 103 to 167, with an average of 141. This average figure is employed as the base for assessing subsequent population growth since it matches the 1986 ABS Census count. It is important to note that the 1986 counts drew no distinction between 'residents' and 'visitors' in the final total. The rationale was that Anangu had only briefly been able to consider Mutitjulu as a permanent place of residence. Consequently, at the time of survey, everyone who was a resident of Mutitjulu had until recently been a resident of another community in central Australia, for example Areyonga, Haasts Bluff, Docker River, Amata, Ernabella, or Mimili (ANPWS 1991: 18).

The remaining two, most recent counts, in 1998 and 2000, were also based on a survey of individuals in family groups and applied similar criteria for inclusion as the 1991 and 1996 census counts. However, in order to ensure that absent usual residents were included and to serve as an aid in identifying those present, administrative data were also accessed by agreement with Mutitjulu Council. A variety of resident listings exist for this purpose including child-care and school enrolments, Centrelink payments, and Mutitjulu Council payroll and rental payments. In addition, the clinic maintains a database of clients which was updated in both 1998 and 2000 to account for movements in and out of the population. Scrutiny of these lists by Anangu assistants uncovered a total of 48 residents to add to those encountered by the 2000 household survey.

The population numbers revealed by these counts are shown in Fig. 1. The trend in population growth is also shown using a best-fit curve. Clearly, there has been overall steady growth, although the period between 1996 and 1998 witnessed a marked jump in recorded numbers, and the beginning, it appears, of a stage of more rapid growth. According to these data, the population increased at a rate of 4 per cent per annum between 1986 and 1996, while growth between 1998 and 2000 occurred at 8 per cent per annum from a much higher base. It seems likely that this sudden rise in the base population level is at least partly attributable to the methodological shift described above, involving the use of administrative lists in the more recent counts. As a consequence, it could be said that a consistent time series does not exist. However, it is arguable that the 1986 population count is consistent with those in 1998 and 2000, since the surveys upon which the 1986 figure is based, as with the 1998 and 2000 surveys, were informed by genealogical data and involved close co-operation with the community council.

Fig. 1 Population counts and estimates: Mutitjulu, 1978–2000



Projection methodologies

There are no formally accepted rules or procedures for demographic projection.[1] Rather, there exists a large body of professional literature which is concerned with the computation of future populations and which collectively contains a set of guidelines that are generally accepted as representing good projection practice. Among these is the principle, supported by empirical evidence, that the accuracy of projections diminishes with time (Bell 1992; Smith & Sincich 1991). It is also well established that projections for large populations are more reliable than those for small populations (Keyfitz 1981).

Partly for such reasons, official projections of Indigenous populations in Australia have only ever been produced for large geographic areas (States and Territories) and never at the level of a small individual community such as Mutitjulu (ABS 1998b). Also, they have only ever been prepared for much shorter time periods (10 years) compared to the 50-year period often applied to the general population (ABS 1998c). While such observations do not invalidate the present exercise, they provide an indication of the innovative nature of projecting small Indigenous populations.

Among the methods available for population projection, three groupings are most relevant to the present exercise: mathematical methods, cohort component methods, and ratio allocation methods.

For mathematical projections a rate of population growth is either assumed or established empirically and simply extrapolated into the future. If this is done arithmetically then growth occurs by the same amount in each year of the projection period, resulting in a straight line projection when graphed. Alternatively, geometric or exponential growth assumes a compound rate of increase over time, resulting in an upward curve when graphed. While these methods are easy to apply, they produce only an estimate of total population, with no indication of future population composition, for example by age and sex. Nor do they account for the very important effects that changing age and sex structures can have on growth rates.

The most accurate population projections are those that account for the effects of changes in population age structure and the manner in which these changes interact with other demographic processes. Accordingly, the cohort component method, as it is called, is the most commonly used form of population projection: it examines separately the three components of population change—mortality (survival), fertility, and net migration. Rates for these components of change are applied to each cohort of a base population, resulting in a set of projections for a set time period. The process is iterative over the projection period.

The final method of projection—ratio allocation—applies either of the above two methodologies to develop a projection of a selected region. The ratio allocation involves the development of a formula for distributing the projected population of this region among its constituent parts as required. It is ideally suited to small area geographies that are not easily projected by the other methods: it overcomes

some of the problems of projecting numbers for sub-regions or individual places where relatively small variations in growth rates can have substantial numeric effect. Also, the allocation of a share of regional growth to a specific location sets a limit on maximum possible growth for that location, and imposes some sense of benchmarking against the wider context.

Mathematical projections to 2021

From the counts in Fig. 1, and the assessment of their consistency, two time periods are available for the purpose of establishing population growth rates for Mutitjulu. The first of these covers the period between 1986 and 2000, over which time the population increased by 175 per cent at a rate of 12.5 per cent per annum. The second period is between 1998 and 2000 when the population increased by 16 per cent, or 8 per cent per annum. Assuming that these growth rates will persist to 2021, a range of outcomes are projected:

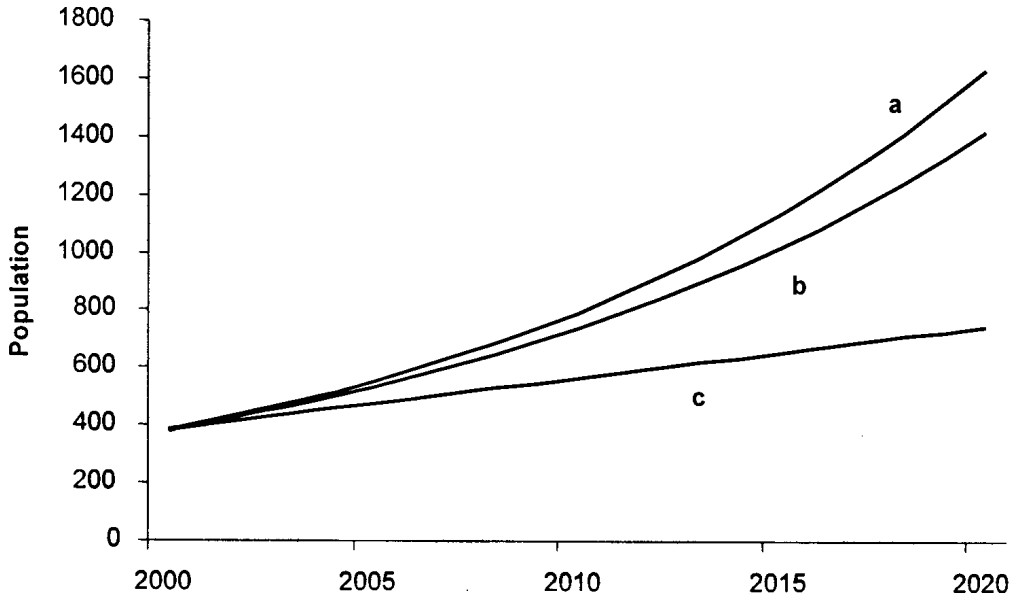
- if the population growth experienced over the whole of the historic period (1986–2000) continues at a geometric (compound) rate over the projection period, then the population in 2021 would be around 1,750 (Fig. 2, curve a);
- alternatively, if the more recent experience of growth between 1998 and 2000 is used as the basis for applying a compound rate, then the resultant population in 2021 is somewhat lower at around 1,400 (curve b);
- if, on the other hand, the population were to grow arithmetically, with the annual increase in numbers consistent with that observed over the past 14 years, then a much lower population total of around 760 would be the outcome in 2021 (curve c);
- however, this would be substantially higher (around 1,320) if the arithmetic increase in population experienced over the past two years (1998–2000) were to be sustained.

Anecdotally, it has been claimed that the population at Mutitjulu might expand exponentially. If that were to be so, the above projection indicates that this expansion would culminate in a population of around 1,750 by 2021. This is most unlikely. The experience of population growth generally suggests that it is unusual for local populations to grow at a geometric or exponential rate for any sustained length of time. Typically, small geographic areas encounter a ceiling effect whereby populations may grow rapidly for a while, but then more slowly as their size increases (Raymondo 1992: 175). Alternatively, an area may experience cycles of rapid, followed by slow, growth. Such constraints on the pace of growth are implied in the application of logistic curves in population projections. This practice is not followed here as it assumes knowledge of an upper population limit (Raymondo 1992: 173–5), although some sense of what this might be is available from the experience of other settlements in the region.

In the region of central Australia where Mutitjulu is situated, no single settlement has displayed the sort of growth pattern exhibited by the exponential curves (a) and (b) in Fig. 2, nor has any settlement reached the size implied by such an

expansion in population. The actual pattern of settlement growth observed generally around the region over the past 20 years is one whereby community populations reach a ceiling (typically between 250 and 500 people) at which point they either cease growing or decline in size. In this region, such limits on settlement size have been manifest in a proliferation of new outstation communities (Cane & Stanley 1986).

Fig. 2 Geometric and arithmetic population growth curves: Mutitjulu, 2000–21



Notes: a. Geometric growth based on annual rate of growth between 1986 and 2000; b. Geometric growth based on annual rate of growth between 1998 and 2000; c. Arithmetic growth based on annual rate of growth between 1986 and 2000.

The data describing this phenomenon are presented in Table 1. In the entire central Australian region only one community (Amata) seems to fit the growth trend observed at Mutitjulu since the 1980s, with an average annual rate of growth (13%) similar to that recorded for Mutitjulu (12.5%). No other community has approached this rate of growth. Some have reached, or slightly exceeded, the population now recorded at Amata (over 500), but none have continued to expand much beyond this level—indeed for the most part they appear to have subsequently declined in size, according to official measures.

Thus, in order to lend credence to the population projections for Mutitjulu represented by curves (a) and (b) in Fig. 2, it would be necessary to justify the prediction that it would expand in a manner substantially at variance with a well-established regional trend in settlement size evolution. As will be shown later in

the analysis, while there are several economic and social factors that make Mutitjulu unique in the region, these are considered insufficient to underpin such an expansion of population.

Table 1 Population counts for major communities in central Australia, 1981–96

	1981	1986	1991	1996	Annual growth rate (%) 1981–96
Northern Territory					
Aputula				149	
Areyonga	141	152	136	247	5.0
Docker River	206	245	233	246	1.3
Hermannsburg	453	453	380	419	-0.5
Imanpa				118	
Papunya	563	307	300	248	-3.7
Willowra	277	210	320	203	-1.8
Yuendumu	587	680	591	607	0.3
Western Australia					
Irrunytju			127	165	
Papulankutja			190	172	
Tjukurla			132	121	
Wanarn				171	
Warburton	329	361	303	400	1.4
South Australia					
Amata	180	277	374	536	13.1
Fregon	203	268	310	345	4.7
Iwantja				422	
Kalka/Pipalyatjarra			144	243	
Mimili	132	145	213	237	5.3
Pukatja (Ernabella)				466	

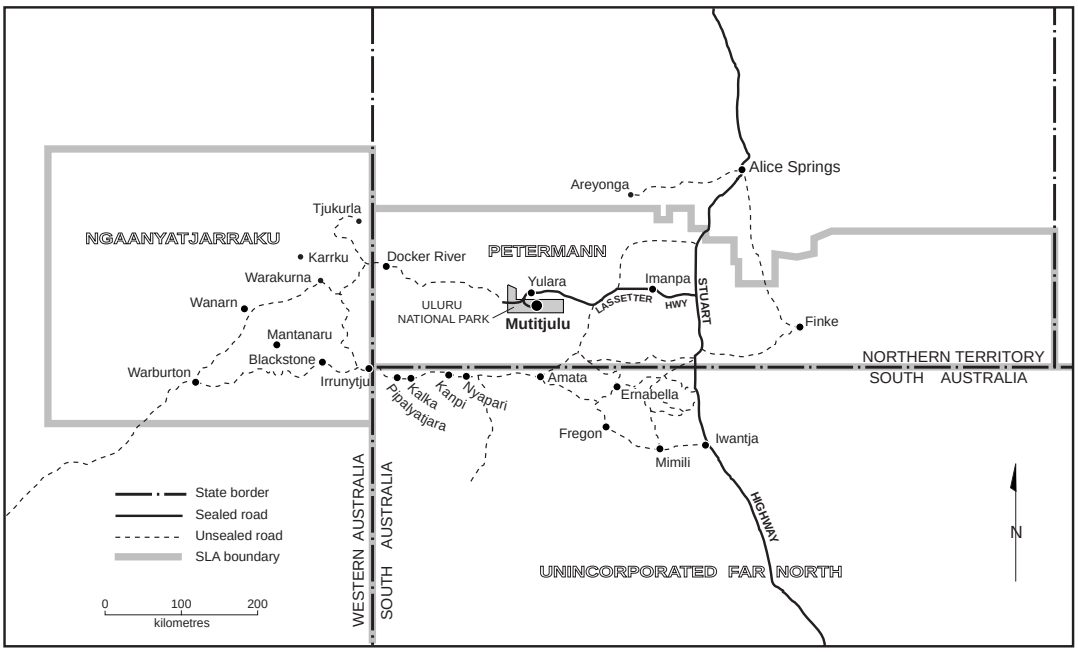
Source: ABS Census of Population and Housing.

Projections based on ratio allocation of the regional population

It is difficult to be precise about population numbers in central Australian settlements, partly because people are frequently mobile in the short term. This leads to large fluctuations in population size and composition from month to month at any given locality (Altman 1988; ANPWS 1991; Warchivker, Tjapangati & Wakerman 1999; Young & Doohan 1989). In Mutitjulu, the extent of this mobility is heightened by past residential and current social, economic, and kinship ties with a number of communities across the southern part of the Northern Territory, the Pitjantjatjara Lands of South Australia, and across these borders into Western Australia.

As indicated in Fig. 3, this catchment is probably best described as approximating the region and communities serviced by the Ngaanyatjarra-Pitjantjatjara-Yankunytjatjara (NPY) Women's Council. This organisation was formed during the South Australian Pitjantjatjara land rights struggle of the late 1970s and draws representation from communities living across a region covering 350,000 km^2 on NPY lands—an area broadly described as the Western Desert Language region within which people share strong cultural, linguistic, and family affiliations. The NPY Women's Council has five offices in this region at Umawa, Wingellina, Blackstone, Finke, and Mutitjulu. Interestingly, this is also the catchment area from which Maruku Arts and Crafts (which is based at Mutitjulu) gathers artefacts for marketing.

Fig. 3 The NPY region: Associated settlements and statistical boundaries



This form of regional network and the patterns of circular mobility that it generates have been described empirically for central Australia by Young and Doohan (1989). They note that all too often there is a disjunction between the patterns of spatial interaction on the ground and the configuration of statistical boundaries that seek to represent these realities, as a means to inform policy and provide for efficient administration and service delivery. They suggest that one means of overcoming this problem is to delineate Aboriginal statistical regions based on the 'activity spaces' of remote area populations. Fortunately, the NPY region represents one such case where statistical boundaries and 'activity spaces' broadly overlap.

Partly because this region is socially integrated it conveniently divides into three Statistical Local Areas (SLAs) within the Australian Standard Geographical Classification (ASGC). As indicated in Fig. 3, these are the Unincorporated Far North SLA in South Australia, Petermann SLA in the Northern Territory, and Ngaanyatjarraku SLA in Western Australia.[2]

For the purposes of population projection, there are several reasons why this breakdown of the region into SLAs is significant. As a result, census counts of the Aboriginal population are available for 1986, 1991 and 1996, and post-censal estimates of the Aboriginal population by sex and five-year age-group are also available for 1996. Finally, vital statistics relating to Aboriginal births and deaths are also available for the same geographic areas and, most importantly, for the last intercensal period between 1991 and 1996.

Mutitjulu sits very much at a crossroads in terms of regional population movement and, for a variety of reasons, it has become an increasingly favoured place of residence for people from within the NPY region. This is not to deny that interactions also exist between the regional population and places such as Alice Springs, and even Port Augusta, but the essential demographic connections are between places within the cultural bloc that forms the NPY region. At Mutitjulu this is evidenced by the fact that residents' previous places of residence are located almost entirely within this region. These links with the region form a compelling basis for developing a projection of the Mutitjulu population using a ratio allocation method—in other words, by distributing a relevant share of the projected regional population to Mutitjulu.

Step 1: Projection of the NPY regional population

The first task in developing a ratio allocation projection of Mutitjulu is to project the population of the NPY region. The 1996 Estimated Resident Population (ERP) of the NPY region provides the base for this population projection, and this is shown by sex and five-year age-group in Table 2. Construction of the ERP by the ABS involved the following adjustments to census 'usual residence' counts for each of the three SLAs:

- pro rata distribution of non-responses to the census question on Aboriginal or Torres Strait Islander origin;
- correction for net undercount of the population by applying an age, sex-specific undercount distribution for the total Australian population to the total Indigenous undercount rate of 7.1 per cent;
- adjustment to account for the difference between census numbers of individuals aged less than 5 years and registered births for the intercensal period 1991–96 (ABS 1998b: 27–9).

It should be noted that these estimates are referred to by the ABS as 'experimental' owing to the uncertain quality of data on births, deaths and internal migration. However, it is also worth pointing out that the 1996 ERP for the Unincorporated Far North SLA in South Australia (2,546) is the same as that

utilised by Nganampa Health Council as the 1996 population of the Anangu Pitjantjatjara (AP) Lands (Nganampa Health Council 1998: 29). While this provides only a partial validation of the base population estimates for the NPY region, it is at least some reassurance given the limited capacity for assessing the accuracy of small area population estimates (Howe 1999).

Table 2 Estimated resident population for the NPY region by age and sex, 1996

Age-group	Number			%		
(years)	Males	Females	Total	Males	Females	Total
0–4	306	315	621	12.4	12.9	12.7
5–9	291	307	598	11.8	12.5	12.2
10–14	226	223	449	9.2	9.1	9.1
15–19	242	243	485	9.8	9.9	9.9
20–24	253	291	544	10.3	11.9	11.1
25–29	269	254	523	10.9	10.4	10.7
30–34	207	209	416	8.4	8.5	8.5
35–39	146	153	299	5.9	6.2	6.1
40–44	125	107	232	5.1	4.4	4.7
45–49	122	89	211	5.0	3.6	4.3
50–54	75	86	161	3.1	3.5	3.3
55–59	62	60	122	2.5	2.4	2.5
60–64	38	59	97	1.5	2.4	2.0
65+	96	55	151	3.9	2.2	3.1
Total	2458	2451	4909	100.0	100.0	100.0

Source: ABS, Canberra.

Birth and death rates

Selection of the appropriate mortality (survival) and fertility rates to apply to each cohort of the base population is an important step in the application of cohort component projections. Fortunately, some guidance as to what these might be is provided by crude birth and death rates published by the Nganampa Health Council for the population resident in the AP Lands. In 1993–94, the crude birth rate (CBR) in the AP Lands was calculated at 17 births per 1,000 population and the crude death rate (CDR) was 7.8 deaths per 1,000 population (Nganampa Health Council 1995: 25–6). Given the consistency of social and economic conditions prevailing throughout the NPY region, it is assumed that these crude rates apply across the wider region.

Unfortunately, Indigenous age-specific birth and death rates are only published by the ABS at the State and Territory level (ABS 1997: 56; ABS 2000). However, the rates available for South Australia, Western Australia, and the Northern Territory are considered to be the most reliable nationally because of their relatively high estimated coverage of the Indigenous population in vital statistics compared to other States. The NPY region straddles all three jurisdictions, raising the question of which set of rates should be applied in the cohort component

projection. To resolve the dilemma, age-specific rates for each of South Australia, Western Australia, and the Northern Territory were applied to the base population shown in Table 2, to calculate the number of births and deaths produced in each case. These data were then converted into crude rates per 1,000 population, for comparison with the crude rates calculated for the AP Lands by Nganampa Health. The comparison revealed that the crude rates derived using Northern Territory data (a CBR of 19.7 per 1000 and a CDR of 8.2 per 1,000) were by far the closest to the AP Lands benchmark—as might be expected, since those for South Australia and Western Australia reflect more urbanised populations.

As a further check of the applicability of Northern Territory rates, data were also obtained from the ABS on the number of births and deaths in each SLA within the NPY region based on notifications to the Registrar of Births and Deaths between 1992 and 1996 (calendar year only). These indicated a total of 470 births and 175 deaths for calendar years 1992–96 which is acceptably close to the estimate of 654 births and 155 deaths produced by the application of Northern Territory vital rates for the later period of 1996–2001. On the strength of this validation, age-specific rates for the Northern Territory were selected for use in the projection.

From the above comparisons, it appears that Northern Territory fertility rates may be somewhat higher than those prevailing in the NPY region. For this reason, two sets of fertility assumptions are made in the projection in order to make some allowance for declining fertility:

- an annual decline in fertility rates of 1 per cent per annum (low series projection).
- no change in current fertility rates (high series projection);

Survival rates are held constant for the projection period, in line with evidence that life expectancy for Indigenous people in recent times (1986–91 and 1991–96) has only slightly improved in the Northern Territory and was actually lower in both South Australia and Western Australia (Gray 1997: 12).[3]

Net migration

Migration is the most troublesome of the components of population change because it can substantially impact on local population growth, yet it is difficult to acquire reliable data. Nonetheless, in using a cohort components methodology it is necessary to derive a set of net migration rates (balance of in-movements and out-movements) by age and sex. While such data are available from the 1996 Census for the Petermann and Ngaanyatjarraku SLAs, the ABS has not published this data for the Unincorporated Far North SLA as the census count in that area was deemed to be deficient (Ross 1999). In any case, there are serious doubts about the utility of census-derived migration data for Indigenous populations in remote areas, where the recorded rates of movement are very low (Taylor & Bell 1996). The gap between empirically observed high mobility and low census-derived rates is a measure of the inability of census questions on fixed period migration to record circular or short-term movement. Furthermore, many

Aboriginal people conceive of residential space in regional terms rather than as a single place. As a consequence, the whole concept of 'usual place' of residence, as employed in census measurement of mobility, is problematic.

It is noted that the Nganampa Health Council considers in-migration from outside the AP Lands to have been one of the factors contributing to population growth in that area since the mid 1980s (Nganampa Health Council 1998, 1999). However, the same source indicates no growth in population in the late 1990s, pointing to the possibility of subsequent net migration loss. For the other two SLAs, no indications of likely net migration flows are available. In sum, there are insufficient data with which to measure the impact of net migration on the regional population. For this reason, net migration is set to zero in the projection and the only population growth assumed is that due to natural increase. It is not suggested that there is no migration; it is simply assumed that such movement in and out of the region as does occur will be in balance.

The actual projection is conducted separately for males and females in five-year blocs from 1996 to 2021. Projected births for the 2001–06 period are added to the existing 2001 population and each cohort is then subjected to respective survival rates to arrive at an estimate of the population in each age-group in 2006.[4] This process is continued through to 2021 and the results in terms of population size and age structure at each five-year interval are shown in Tables 3 and 4, for the high series and low series projections respectively.

Projection results

Several points of interest arise from the projection results. First, the high series projection indicates a population for the NPY region of almost 7,000 by 2021, whereas the low series projection, based on declining fertility, points to a population of just over 6,600. Second, the sex ratio (ratio of males per 100 females) declines over the period from virtual parity in 1996 (100.3) to 95 males per 100 females in 2021 in both series, pointing to increasingly fewer males in the population as a consequence of higher male mortality. The shifting age distributions derived from each projection series are shown in Tables 5 and 6. Clearly, in both cases the population becomes older, on average, with the dominant feature being a decline in the percentage of the population at young ages, especially under 14 years, and a rise in the proportion in middle to old age (40–64 years). The drop in the proportion of the population aged below 15 years is most marked in the low series projection (Table 6) with correspondingly higher percentages in the middle age-groups.

Table 3 NPY regional population: High series projection by five-year age-group, 1996–2021

Age-group (years)	No. of individuals					
	1996	2001	2006	2011	2016	2021
0–4	621	640	653	689	730	764
5–9	598	617	635	649	685	725
10–14	449	596	615	634	647	683
15–19	485	447	594	612	631	644
20–24	544	480	443	588	607	625
25–29	523	535	472	435	579	597
30–34	416	510	522	461	424	564
35–39	299	400	490	503	443	408
40–44	232	284	380	466	479	421
45–49	211	215	264	353	432	445
50–54	161	189	193	237	318	389
55–59	122	142	166	169	209	280
60–64	97	101	118	136	140	173
65–69	70	75	77	90	103	107
70–74	19	50	54	56	66	75
75+	62	34	35	37	39	44
Total	4909	5314	5711	6116	6530	6942
Males	2458	2639	2818	3008	3202	3398
Females	2451	2675	2892	3108	3328	3545
Sex ratio	100.2	0.98	0.97	0.96	0.96	0.95

Table 4 NPY regional population: Low series projection by five-year age-group, 1996–2021

Age-group (years)	No. of individuals					
	1996	2001	2006	2011	2016	2021
0–4	621	640	621	624	628	621
5–9	598	617	635	617	619	623
10–14	449	596	615	634	615	618
15–19	485	447	594	612	631	612
20–24	544	480	443	588	607	625
25–29	523	535	472	435	579	597
30–34	416	510	522	461	424	564
35–39	299	400	490	503	443	408
40–44	232	284	380	466	479	421
45–49	211	215	264	353	432	445
50–54	161	189	193	237	318	389
55–59	122	142	166	169	209	280
60–64	97	101	118	136	140	173
65–69	70	75	77	90	103	107
70–74	19	50	54	56	66	75
75+	62	34	35	37	39	44
Total	4909	5314	5679	6018	6330	6601
Males	2458	2639	2802	2957	3099	3222
Females	2451	2675	2877	3061	3231	3378
Sex ratio	100.2	0.98	0.97	0.96	0.96	0.95

Table 5 NPY regional population: High series projection by percentage age distribution, 1996–2021

Age-group (years)	% of population					
	1996	2001	2006	2011	2016	2021
0–4	12.7	12.0	11.4	11.3	11.2	11.0
5–9	12.2	11.6	11.1	10.6	10.5	10.4
10–14	9.1	11.2	10.8	10.4	9.9	9.8
15–19	9.9	8.4	10.4	10.0	9.7	9.3
20–24	11.1	9.0	7.8	9.6	9.3	9.0
25–29	10.7	10.1	8.3	7.1	8.9	8.6
30–34	8.5	9.6	9.1	7.5	6.5	8.1
35–39	6.1	7.5	8.6	8.2	6.8	5.9
40–44	4.7	5.3	6.7	7.6	7.3	6.1
45–49	4.3	4.0	4.6	5.8	6.6	6.4
50–54	3.3	3.6	3.4	3.9	4.9	5.6
55–59	2.5	2.7	2.9	2.8	3.2	4.0
60–64	2.0	1.9	2.1	2.2	2.1	2.5
65–69	1.4	1.4	1.3	1.5	1.6	1.5
70–74	0.4	0.9	1.0	0.9	1.0	1.1
75+	1.3	0.6	0.6	0.6	0.6	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

Table 6 NPY regional population: Low series projection by percentage age distribution, 1996–2021

Age-group (years)	% of population					
	1996	2001	2006	2011	2016	2021
0–4	12.7	12.0	10.9	10.4	9.9	9.4
5–9	12.2	11.6	11.2	10.2	9.8	9.4
10–14	9.1	11.2	10.8	10.5	9.7	9.4
15–19	9.9	8.4	10.5	10.2	10.0	9.3
20–24	11.1	9.0	7.8	9.8	9.6	9.5
25–29	10.7	10.1	8.3	7.2	9.1	9.0
30–34	8.5	9.6	9.2	7.7	6.7	8.5
35–39	6.1	7.5	8.6	8.4	7.0	6.2
40–44	4.7	5.3	6.7	7.7	7.6	6.4
45–49	4.3	4.0	4.6	5.9	6.8	6.7
50–54	3.3	3.6	3.4	3.9	5.0	5.9
55–59	2.5	2.7	2.9	2.8	3.2	4.2
60–64	2.0	1.9	2.1	2.3	2.2	2.6
65–69	1.4	1.4	1.3	1.5	1.6	1.6
70–74	0.4	0.9	1.0	0.9	1.0	1.1
75+	1.3	0.6	0.6	0.6	0.6	0.7
Total	100.0	100.0	100.0	100.0	100.0	100.0

Step 2: Establishing the Mutitjulu share of regional population

The methodological key to the ratio allocation projection is an assessment of the likely future share of the NPY regional population allocated to Mutitjulu. One way of determining this, as a first approximation, is to establish the current and past regional share and then to assume that any discernable trend will continue into the future.

As shown in Table 7, the population at Mutitjulu accounted for 3.7 per cent of the regional total in 1986, but by 2000 it is estimated to have risen to 7.4 per cent. This represents an increase in the share of regional population of 0.26 percentage points each year. If this annual amount of increase were to continue, then by 2021 the Mutitjulu share of the regional population would be almost 13.0 per cent.

Table 7 Mutitjulu share of NPY regional population, 1986–2000

Year	NPY region	Mutitjulu share (%)	Mutitjulu
1986	3753	3.7	140
1991	4279	3.8	162
1996	4909	4.0	196
1998	5719	5.8	331
2000	5233	7.4	385

Table 8 shows that, using the low series regional projection (8a), this percentage converts to a population for Mutitjulu of 849 by 2021; using the high series projection (8b) the population reaches 893. Also indicated in Table 8 is the population at each five-year interval between 2001 and 2021. The narrow range of estimated growth scenarios produced by the two projection series is shown graphically in Fig. 4. This limited variation is a deliberate outcome, motivated by the high degree of uncertainty surrounding much of the demographic data. In situations of poor data quality it is advisable to make as few assumptions as possible regarding change in demographic parameters in order to avoid compounding any error. As noted, the only allowance made here is for a variation in fertility rates.

Clearly, much hinges on the reliability of the estimate of Mutitjulu's future share of regional population. While the projection assumes that previous growth in this share was linear and that it will continue to be so, the population counts in Fig. 1 suggest that growth is typically more erratic and occurs in short bursts, while large fluctuation in numbers (both up and down) is a characteristic feature over the short term.

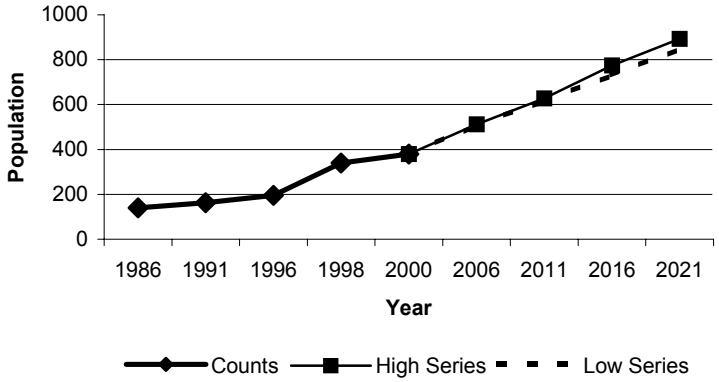
Table 8 Mutitjulu population based on ratio allocation of NPY regional population, 2001–21

Year	NPY region population	Mutitjulu share (%)	Mutitjulu population
(a) Low series			
2001	5314	7.66	407
2006	5679	8.96	509
2011	6018	10.26	617
2016	6330	11.56	732
2021	6601	12.86	849
(b) High series			
2001	5314	7.66	407
2006	5711	8.96	512
2011	6116	10.26	628
2016	6530	11.56	775
2021	6942	12.86	893

If there is a methodological weakness in these estimates, it derives from the assumption that Mutitjulu's share of the wider regional population will continue to expand each year by the same amount. Obviously, this could not continue indefinitely and some tapering off must eventually occur. What is not known, and what has not been built into the analysis, is any indication of when that tapering off might occur. However, on the basis of socio-cultural rather than statistical data, it is possible to argue that the population range of 850–890 projected for Mutitjulu by 2021 should be viewed as a likely ceiling on future numbers rather than as part of an ever-rising level of population.

Certainly, given the dispersed nature of settlement in the region to date, it is difficult to envisage that the population of Mutitjulu (or any other Aboriginal community for that matter) would expand to a point where it represented much beyond 13 per cent of the regional population. If this were to eventuate, one would be faced with having to explain (with difficulty) why up to one-fifth of Anangu in central Australian might be resident in a single locality. Socio-cultural factors make this an unlikely future scenario.

Fig. 4 Mutitjulu population growth and projections, 1986–2021



Change in demographic composition

One indication of the changing composition of the Mutitjulu population is provided by comparing the age distribution at each population count since 1985. This is shown in Table 9, with comparative data for the NPY region as a whole. Clearly, following its formation, Mutitjulu had a relatively aged population, with 38 per cent of people over 35 years and almost one-quarter of the population (22%) over 50 years. This compares to equivalent figures for the wider region in 1996 of only 26 per cent and 11 per cent respectively.

The effect of population growth has been to reverse this situation. Mutitjulu now has a slightly younger age profile than the region, with just over 35 per cent under 14 years compared to 34 per cent regionally, and 24 per cent aged between 20 and 29 years compared to 22 per cent regionally. This substantial shift in demographic composition over the 15-year period is a consequence of age-selective migration and a growing number of births to Mutitjulu residents.

Table 9 Five-year age distribution: Mutitjulu 1985–2000, and NPY region 1996

Age-group (years)	% of population					
	1985	1991	1996	1998	2000	NPY 1996
0–4	10.0	16.0	8.7	11.2	15.1	12.7
5–9	9.3	3.7	11.7	12.7	10.6	12.2
10–14	14.3	7.4	5.6	7.3	9.4	9.1
15–19	9.3	9.3	5.6	8.8	6.8	9.9
20–24	5.0	12.3	10.7	14.2	11.2	11.1
25–29	4.3	7.4	10.7	10.9	12.7	10.7
30–34	9.3	6.2	10.2	9.4	8.1	8.5
35–39	11.4	6.2	7.7	3.6	5.2	6.1
40–44	1.4	4.9	9.2	3.9	5.5	4.7
45–49	3.6	6.2	5.6	3.3	4.2	4.3
50–54	3.6	3.7	4.1	4.2	2.6	3.3
55–59	2.1	3.1	2.0	2.4	2.6	2.5
60–64	2.8	3.1	3.1	2.7	1.8	2.0
65+	13.6	4.3	5.2	5.4	4.2	3.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

Further indication of the composition of this shift is provided in Table 10 which shows the net change in five-year age-groups between each population count. The striking feature is that virtually all net gains have been in the younger age-groups, especially between 1996 and 1998, and that this trend appears to have continued over the last two years. Increasingly throughout the 1990s, there has been an influx of young adults aged 20–39 years together with their offspring.

Table 10 Net change in population counts by five-year age-group: Mutitjulu, 1986–2000

Age-group (years)	1986–91	1991–96	1996–98	1998–2000
0–4	12	-9	20	21
5–9	-7	17	19	-1
10–14	-8	-1	13	12
15–19	2	-4	18	-3
20–24	13	1	26	-4
25–29	6	9	15	13
30–34	-3	10	11	0
35–39	-6	5	-3	8
40–44	6	10	-5	8
45–49	5	1	0	5
50–54	1	2	6	-4
55–59	2	-1	4	2
60–64	1	1	3	-2
65–69	0	-2	4	-6
70+	-12	5	4	4
Total	22	34	135	53

Confirmation of this trend is provided by increased enrolments at Mutitjulu school (up from an average of 29 enrolments in 1996 to an average of 42 in 2000) and at the child-care centre (up from 32 regular enrolments in 1998 to 51 in 2000). While some of these young family groups are new to Mutitjulu, many of them are related to existing residents, and as such represent generational expansion.

Future age distribution of Mutitjulu

Projecting the future age distribution of the Mutitjulu population is risky, certainly more so than estimating the overall future size of the population. As Table 10 indicates, movements in and out of the population are highly age-selective. While there has been a tendency for net in-migration to be focused in the younger age-groups, there has also been substantial variation in the amount of gain and loss to each age cohort over time.

The uncertainty in establishing parameters for projecting future age distribution is exacerbated by high population turnover. By comparing the list of residents recorded in 1998 with that recorded in 2000, those leaving the original population, those joining the original population, and those remaining from the original population can be established.

Between 1998 and 2000, a total of 229 individuals (60%) remained resident at Mutitjulu. Over the same period, 80 of the original population (24%) left, while 153 of the current population (40%) arrived. Of these new entrants to the population, 15 (10%) were births to stable residents while the rest were migrants from elsewhere. Of those leaving the population, it is not clear to what extent

their disappearance was due to deaths as these could have occurred away from the community. However, the Mutitjulu Clinic reports only five deaths during this period, suggesting that the bulk of those leaving the population (94%) were out-migrants. Overall, these data indicate considerable population turnover (57%) in just two years.

In this situation, there appears to be no statistically reliable basis for projecting the future age structure of Mutitjulu using the past or present population dynamics of the community as a guide. Instead, it seems advisable, once again, to develop projections of the numbers in each age-group with reference to demographic shifts occurring in the NPY region as a whole.

Thus, it is simply assumed that the age structure of the Mutitjulu population will converge with that projected for the NPY region in 2001 and then follow the regional pattern through to 2021. This is a variant of the ratio allocation methodology and the results, in terms of future numbers in each age-group, are shown in Table 11 (on p. 22) for the low (a) and high (b) series projections.

It is interesting to consider these numeric changes in terms of age-groups that typically form the target of social policy initiatives, at least as far the five-year classification allows. These include the infant and pre-school age-group (0–4 years), the compulsory schooling age-group (5–14 years), the school-to-work transition age-group (15–24 years), the family formation and employment age-group (25–44 years), the family dissolution age-group (45–64 years), and an aged category of those over 65 years (which arguably in an Aboriginal context could be set at a much earlier cut-off point). The numeric increase between 2000 and 2021 is shown for each of these age-groups in Table 12 (on p. 23).

The effects of ageing in the population are clearly visible, with the greatest numeric and proportional increases occurring among young adults entering the workforce as well as among those of prime working age. This has policy implications: it underlines the need for employment generation, and also highlights the growing pressures for new housing since these are also the ages at which new households are formed. There are also likely to be many more people of relatively old age (over 45 years), and given the higher rates of morbidity in middle ages and beyond, this points to an expanded need for health services. Among children, it is the primary and high school age cohorts that will experience the greatest expansion. The infant population will also expand, but to a lesser degree.

Validation of projections

The population projections for Mutitjulu are a statistical construct, correct according to the algorithms used. However, whether they are valid or not depends upon the interpretation of the results against the background of local and regional socio-economic trends. There are factors, both current and future, which are likely to act as stimulants to further population growth at Mutitjulu. At the

same time, there are compelling reasons to expect limits on future growth. Each of these forces is considered in turn.

Table 11 Projected population by five-year age-group: Mutitjulu, 2001–21

Age-group (years)	2001	2006	2011	2016	2021
(a) low series					
0–4	49	56	64	73	80
5–9	47	57	63	72	80
10–14	46	55	65	71	79
15–19	34	53	63	73	79
20–24	37	40	60	70	80
25–29	41	42	45	67	77
30–34	39	47	47	49	73
35–39	31	44	52	51	53
40–44	22	34	48	55	54
45–49	16	24	36	50	57
50–54	14	17	24	37	50
55–59	11	15	17	24	36
60–64	8	11	14	16	22
65–69	6	7	9	12	14
70–74	4	5	6	8	10
75+	3	3	4	4	6
Total	407	509	617	732	849
(b) High series					
0–4	49	56	65	77	84
5–9	47	57	64	76	84
10–14	46	55	66	75	84
15–19	34	54	64	77	83
20–24	37	40	61	74	84
25–29	41	43	45	71	81
30–34	39	47	48	52	76
35–39	31	44	52	54	55
40–44	22	34	49	59	57
45–49	16	24	37	53	60
50–54	14	17	25	39	53
55–59	11	15	18	26	38
60–64	8	11	14	17	23
65–69	6	7	9	13	14
70–74	4	5	6	8	10
75+	3	3	4	5	6
Total	407	512	628	775	893

Table 12 Numeric increase in social policy target groups: Mutitjulu, 2000–21

Age-group (years)	2000	2021	% increase
(a) Low series			
0–4	49	80	63.2
5–14	93	159	71.0
15–24	71	159	123.9
25–44	133	257	93.2
45–64	49	165	236.7
65+	13	30	130.7
(b) High series			
0–4	49	84	71.4
5–14	93	168	80.6
15–24	71	167	135.2
25–44	133	269	102.2
45–64	49	174	255.1
65+	13	30	130.7

Stimuli to growth

Several factors, unique to Mutitjulu, serve to attract large numbers of people from around the region for short periods of time. For example, it is claimed anecdotally that the population swells to over 1,000 in November of each year as relatives of resident traditional owners congregate at Mutitjulu at the time of the distribution of National Park rent and gate monies. While the majority of these visitors subsequently move on again, it is observed by both PAN and the Mutitjulu Council that some individuals linger. Yet others take up more permanent residence. A similar demographic impact was observed following the activities surrounding the commencement of the Olympic Torch Relay at Uluru in June 2000. This might be described as 'event-driven' population accretion.

Other factors providing periodic stimuli to growth include infrastructural developments. For example, Mutitjulu Council received approval from the Aboriginal and Torres Strait Islander Commission (ATSIC) for additional housing and infrastructure funding as part of the National Aboriginal Health Strategy in the 1999–2000 financial year. Three new houses were completed in that year and a further seven are scheduled for completion during the current financial year, with renovations to nine existing dwellings. This will boost the habitable dwelling stock at Mutitjulu by more 50 per cent, and while some reduction in overcrowding is to be expected, resident Anangu also anticipate that the increased availability of housing will draw extended family members into the community from elsewhere in the region. The existence of established PAN housing stock for parks staff close to Mutitjulu should also be noted, for if PAN were to relocate its non-Anangu staff to Yulara, this would provide a further option for growth in community housing.

There are also more persistent and structural influences on Mutitjulu's continued population growth. For example, in 1997 Nyangatjatjara College was established at Yulara by the Nyangatjatjara Corporation. This is a non-government secondary school catering for the needs of secondary school-age students from Docker River, Mutitjulu, and Imanpa. It is based on a residential campus at Yulara which is used alternately each month by male and female students. In between, campuses at each of the three feeder communities are also utilised. The significance of this development, from a demographic perspective, flows from the fact that secondary-school age children need no longer leave the region to attend school in Alice Springs, or even further afield.

A more pervasive influence on population growth, however, is likely to stem from evolving economic developments associated with tourism and the potential that this generates for Anangu employment. Some sense of the scope for employment has been outlined during the development of the draft Uluru-Kata Tjuta National Park Plan of Management 1998–2004. It basically involves opportunities in park management and in the private sector (Office of Joint Management 1999: 40–1, 50). While it is true that this potential has existed for many years, without any appreciable acquisition of jobs—certainly not full-time jobs—by Anangu, the potential is nonetheless always there and is likely to increase over time. For one thing, an expansion of Anangu employment remains a goal of PAN and, indeed, a condition of the park lease. Currently, 36 per cent of PAN's salaries and wages are paid to Anangu, but much of this is for part-time, casual, or seasonal work (Office of Joint Management 1999: 35). The experience of the past decade or so suggests that future growth in more permanent employment will be slow but steady. Between 1986 and 1995, for example, the number of Anangu trainee Rangers increased, but only slightly, from 18 to 25 (pers. comm. John Bonney, Park Headquarters, Uluru-Kata Tjuta National Park, August 2000). In the private sector, Anangu Tours, for example, currently employ eight regular guides but have 73 Anangu registered as potential employees (Office of Joint Management 1999: 38), and the commercial capacity to provide permanent employment for up to 40 (pers. comm. Andrea Martin, Anangu Tours, Yulara, August 2000).

There is presently no Community Development Employment Projects (CDEP) scheme at Mutitjulu, but the community is high on the ATSIC CDEP priority list. There is, however, a recently established Mutitjulu Employment Strategy funded by the Department of Employment, Workplace Relations and Small Business (DEWRSB). Within the first three months of its operation this created 18 training positions in structured workplaces requiring regular attendance at predetermined hours. The main difficulty encountered in converting these positions into permanent jobs has been a high turnover of personnel and irregular attendance (pers. comm. Bruce McPherson, Coordinator, Mutitjulu Employment Strategy, August 2000).

Collectively, these facts point to the existence of unfulfilled employment potential. Reasons for less than optimal outcomes have been detailed elsewhere and do not appear to have altered much over the 15 years since they were first investigated (Altman 1987, 1988; ANPWS 1991; Office of Joint Management 1999: 51).

Basically, a mix of cultural, social, occupational, and administrative factors act as barriers to increased participation in paid work. Although these are of interest, the essential point is that which links Anangu employment and future population growth. It is most likely that the Uluru-Kata Tjuta National Park will remain the regional focus of mainstream employment opportunities, in the absence of any comparable economic development elsewhere in central Australia to the west of Alice Springs. Furthermore, despite the continuing presence of barriers to Anangu participation in paid work, the availability of such work will serve to attract individuals into the area. A contributing factor is the national shift in social policy towards the application of mutual obligation conditions, which involve enhanced activity testing for job seekers. From anecdotal evidence, this impact is being felt already with the tightening of eligibility rules for CDEP scheme participation around the region. In the opinion of the Mutitjulu Council executive staff, one consequence has been an increase in casual job-seeking at Mutitjulu.

A final stimulus to growth is the emerging role of Mutitjulu as a regional service centre for Anangu. This has every prospect of continuing, particularly because of the community's proximity to Yulara. To the extent that servicing functions either involve Anangu (as in the case of park management) or attract Anangu (as in the case of social services), this emergence as a central place is likely to have consequences for population growth. Over the past 15 years a number of regional organisations and service functions have been established at Mutitjulu, including offices of the Central Land Council and the NPY Women's Council. Maruku Arts and Crafts also has its base in Mutitjulu, while the Cultural Centre, Maruku, and Walkatjara Arts at the Park Headquarters are 'shopfronts' to the tourist trade for regional art and culture. There is now a resident doctor at Mutitjulu clinic servicing the south-west region, and Mutitjulu also hosts a regional Disability Centre. Currently, the Mutitjulu Council is seeking formal recognition from Northern Territory Government agencies of its role as a regional centre with a view to establishing local government funding. As the relevant organisation named in the Lease of Uluru-Kata Tjuta National Park, Mutitjulu Community Inc. also plays a leading role in park management—a function that involves traditional owners from around the region.

Limits to growth

While the conditions for sustained population growth clearly exist, there are also likely countervailing forces. First, and foremost, there is the observed pattern of settlement evolution in central Australia. As noted in the discussion of Table 1, this is suggestive of a limit to unfettered expansion, with most places levelling off in size at around 300 to 500 persons. Population growth beyond this has been accommodated by the formation of new settlements, initially as satellite outstations, some of which have developed as separate entities.

It is interesting to note that Mutitjulu began its own version of population dispersion in the mid 1990s. There are 16 recognised Mutitjulu outstations. With the exception of Yulara Pulka and Ampiara, which are west of Yulara, all of these are located either due south of Uluru or due south of Kata Tjuta. By the mid

1990s a program of infrastructure development at many of these outstations had commenced, in line with the expressed wish of a number of Mutitjulu residents to spend time away from the community on traditional lands. Apart from Yulara Pulka, it is estimated that up to four families comprising 30 people were spending short periods of time at some of these outstations by the mid 1990s (pers. comm. Mick Starkey, Mutitjulu Council, August 2000). Mutitjulu Council acquired funding to grade access roads, but shortly after this an ATSIC moratorium on further spending on outstations brought the fledgling movement to an end and the outstations have since been left unoccupied. The point is, however, that both the expressed desire (especially of older Mutitjulu residents) and the beginnings of infrastructural support for some outstations already exist, although the potential infrastructural needs would have to be assessed. The more important question of funding remains unresolved.

Also unclear is what demographic impact, if any, such a development could or might have on Mutitjulu. As noted, elsewhere in central Australia the development of outstations appears to have acted as a brake on the continued growth of many communities, at least as indicated by their periodic population counts. What these counts do not reveal, and what it would be important to know, is the extent to which individuals who occupy outstations nonetheless still spend lengthy periods of time in the main settlement and retain rights of residence there. Nor do they reveal the extent to which the main settlements continue to provide services for their satellites. It appears often to be the case that outstations provide only a short-term alternative residence, especially if their infrastructure and resourcing are rudimentary (Cane & Stanley 1985; Young & Doohan 1989). At Mutitjulu, given the sizeable distance of most outstations outside of the National Park area, there would have to be substantial investment in on-site infrastructure and communications in order to stimulate any long-term relocation of Mutitjulu residents. There is also the issue of precisely which people would settle in such locations: it could be argued that a fully-resourced outstation movement to the south of Uluru-Kata Tjuta might attract people from communities in the AP Lands as much as from Mutitjulu. Clearly, the likely impact of such a development on Mutitjulu's future growth could only be adequately gauged through an assessment of which residents would seek alternative residential options and with what level of commitment.

The reasons underlying an expansion of outstation residence across central Australia have been well canvassed (Cane & Stanley 1985; Commonwealth of Australia 1987; Coombs, Dexter & Hiatt 1982; Downing 1988; Young & Doohan 1989). They include the enhanced capacity to fulfil cultural obligations through direct access to ancestral lands, and gains in wellbeing through living in smaller, more politically manageable social units away from the social pathologies of overcrowded centralised settlements. There are, it seems, limits to growth for desert communities that are linked to issues of sociability and community cohesiveness.

At the inception of Mutitjulu as a settlement in 1985–86, a total of 22 households were identified comprising 33 family groups (Altman 1987: 29; ANPWS 1991: 19).[5]

In 2000, a total of 42 households and 70 family groups were identified, although by a less rigorous methodology.[6] What could usefully be investigated are the unknown implications of this apparent growth in resident family and household groups for community lines of authority, in terms of which some people belong 'more' to Mutitjulu than do others. This became an issue in the emergent settlement of Docker River through the late 1960s and early 1970s, and was the cause of much disputation (Woenne 1977).

Conclusion

It is possible to construct meaningful projections of the population of Mutitjulu using a ratio allocation of the regional population. Issues of data quality aside, the main methodological weakness in this method derives from the assumption that Mutitjulu's share of the wider regional population will continue to expand each year by the same amount. Obviously this could not continue indefinitely and some tapering off must eventually occur. What is not known, and what has not been built into the analysis, is any indication of when that tapering off might happen. As noted, over the next 20 years it is possible to envisage a number of factors that are likely to encourage further population growth, but it is equally the case that these might be dampened by factors serving to limit continued expansion. When these factors are taken into account, the population range of 850 to 890 projected for Mutitjulu by 2021 appears likely to represent a ceiling on future numbers rather than being part of an ever-rising population level. Certainly, it is difficult to envisage Mutitjulu (or any other Aboriginal community in the region) growing to a point where it represented much beyond 13 per cent of the regional population.

On balance, then, the prospect of the Mutitjulu population reaching a ceiling of between 850 and 890 over the next 20 years appears within the bounds of credibility. Thus, these projections provide a rational basis for canvassing planning options for the community. At the same time, a number of uncertainties remain. For example, the basic model proposed is that Mutitjulu will become an increasing focus of settlement for people from within the NPY region. However, the extent of this will depend on people's preferences and perceptions of other residential locations in the region (or beyond) compared to Mutitjulu, and how the balance of these perceptions might change in the future. Little, if anything, is known about such perceptions and how they influence individual or group decision-making.

Notes

1. Demographers recognise a distinction between a population projection, on the one hand, and a population forecast, or prediction, on the other. The former represents the computed numerical outcome of a step by step procedure for solving a

mathematical problem based on specified assumptions. The latter is a subset of projections and denotes an attempt to accurately predict a future population based on the judgement of the analyst as to the most plausible set of assumptions (Keyfitz 1972). In practice, the distinction between these methodologies is largely semantic since forecasting invariably involves projection, while projections are invariably based on judgements regarding plausible assumptions for growth. Accordingly, the two terms are often used interchangeably as, indeed, they are here.

2. As shown in Fig. 3, Areyonga, which is socially connected to Mutitjulu, is located just north of the Petermann SLA boundary and so is not incorporated by this statistical geography.
3. In the Northern Territory, Aboriginal life expectancy was 55.1 years for males in 1986–91 rising to 55.4 years in 1991–96. For females it rose from 61.8 years to 62.7 years. In Western Australia, however, male life expectancy was 55.7 years and fell to 54.7 years, while for females it fell from 63.1 years to 62.1 years. Similarly, in South Australia, life expectancy for males fell from 56.4 years to 56.3 years, and for females from 66.4 years to 63.9 years.
4. Survival rates were derived from the Indigenous abridged life tables for the Northern Territory, 1995–97 (ABS 1998a).
5. A household is defined here as a group of closely related people living in houses or wiltjas, or other structures within a specified area considered by them to be their camp.
6. The family groups identified in the 1985 surveys were established using detailed genealogies. Those identified in the 2000 survey were self-declared by respondents and partly indicated by family names.

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