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Population Dynamics in Rural and Remote Queensland

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1 Introduction

1.1 Introduction

Population growth in Queensland, especially in the south-east corner and regional coastal centres has been well documented (Bell 1992, 1995). What is less well documented is the extent and nature of population change in Queensland's inland. While it is widely recognised that rural areas and many small towns are experiencing population decline, the dynamics and causes of these changes are still not well understood.

Population change in inland Queensland can be traced to a wide range of factors affecting both rural areas and regional industries. Greater levels of population mobility brought about by improved transport technology and increasing levels of affluence have affected locational flexibility, at both the personal and business level. Economic restructuring and globalisation of the world economy have affected regional industries and produced more flexibility in enterprise location, creating both opportunity and vulnerability in regions (McKenzie 1994).

Causal factors for rural depopulation include service and employment decline, and the growing influence of urban values and expectations. Those associated with industry-related declines include changing market conditions and, in the case of mining, resource depletion. Some forms of depopulation tend to be short term, associated specifically with industry restructuring. On the other hand, longer term population changes tend to be associated with larger structural transformations, such as:

- withdrawal and redistribution of government services;
- globalisation of commodity, financial and labour markets;
- decline in Australia's economic terms of trade;
- economic restructuring;
- revolutions in transport and communications; and
- increased opportunity for discretionary migration to areas of perceived high amenity.

It is these types of changes, coupled with events such as extended periods of drought, that have led to the sort of long term pattern of decline recorded in much of western Queensland

One phenomenon, not necessarily a cause of depopulation but certainly a contributor, is the increasing adoption of long-distance commuting as a substitute for permanent migration. Long-distance commuting is a mobility strategy that allows workers to live in locations geographically remote from their place of work and is associated with newer mining operations in remote areas of the State, with gas exploitation, with road and rail maintenance and with a number of activities (such as shearing) in the pastoral industry (Bell & Ward 1999).

A key question related to population redistribution associated with the factors listed above is whether regions and towns losing people are also losing wealth. There is mounting evidence that people less well off tend to be relatively less mobile, and in turn tend to be more disadvantaged by economic rationalism and depopulation in rural areas and smaller urban centres around the State. Withdrawal of services, coupled with declining job opportunities, triggers a vicious cycle of cumulative decline from which those most vulnerable to social-economic change are the least well-equipped to escape. The formulation of policies and implementation of programs to enhance regional development remains one of Australia's most challenging agendas.

1.2 Aims and Scope

This project aims to improve understanding of the dynamics of population change in towns and rural areas of inland Queensland by providing a systematic analysis of the historical evolution of Queensland's settlement landscape, recent trends in population growth and decline, migration, and population ageing. The ultimate purpose of the work is to help government make informed decisions regarding provision of infrastructure and services in rural Queensland.

The study has the following objectives:

- To track, using historical data spanning three decades, patterns of population decline and redistribution in rural Queensland;
- To ascertain the relationship between large and small inland towns and their rural hinterlands; are some centres growing as a result of population redistribution from their hinterlands, or are they growing as a result of broader regional influences?
- To assess the role of population mobility, both permanent and temporary, in the dynamics of rural populations: to what extent are seasonal and other temporary movements substituting for permanent residence in rural areas, and how does permanent migration shape the evolution of regional settlement patterns?
- To ascertain the extent to which rural depopulation is self perpetuating, or whether there are minimum thresholds above which populations tend to stabilise. In this regard a key factor is likely to be the age profile of the population and whether a sufficient proportion of individuals are economically active.

1.3 Data and Methodology

A key challenge for this project was the identification of spatially consistent data to enable meaningful comparisons of population change over time. Owing to the significant changes in ABS statistical geography over the last thirty years, the development of a spatially consistent database, tracking the population of Queensland Local Government Areas (LGAs) and Urban Centres and Localities (UCLs) between 1971 and 2001, was a critical first step in this research. Based on the 2001 Australian Standard Geographical Classification, a database of Census counts for all LGAs and UCLs that were defined in all relevant Census years was compiled. The populations of LGAs were adjusted for minor boundary changes over this period while, in the instance of major boundary changes, LGAs were aggregated to form composite regions. The populations of UCLs were adjusted for amalgamations occurring over the study period producing population estimates for all UCLs that existed in 2001.

A major output from this database was an estimation of the percentage of urban and rural population by LGA. The urban population of each LGA was estimated by aggregating the census counts of UCLs falling within the LGA boundaries for each Census year. The rural population was then calculated by subtracting the urban population from the LGA total. In order to maintain temporal consistency, only UCLs that had been counted at all Censuses, from 1971 to 2001, were included in the urban population totals. A more detailed discussion of the methodology involved in creating this database is provided in Bell and Rohlin (2004).

Augmenting the spatially consistent time series population data discussed above, were a variety of sociodemographic statistics collected by the Australian Bureau of Statistics. These included data on intrastate migration flows and age/sex structure. A series of analyses were conducted using these data to ascertain the form and impact of migration and structural ageing on the communities of inland Queensland. These analyses were supplemented with

information drawn from the literature on the population dynamics of rural and remote Australia.

The final methodological issue for this project was the development of an effective regionalisation of inland Queensland which enabled a meaningful analysis of population dynamics and their relationship to broader socioeconomic trends. While a number of regional frameworks are available including the Accessibility/Remoteness Index Australia (ARIA) used by the ABS and the zonal categorisation developed by Haberkorn et al. (2004) for the Bureau of Rural Sciences, these were deemed too general for the current study. Therefore, an alternative zonal classification was developed demarcating the following zones:

- Southeast Queensland;
- Coastal Queensland;
- Agricultural Queensland;
- Pastoral Queensland;
- The Remote Interior; and
- Remote Northern Queensland.

The zones, and the rationale behind them, are fully explained in Chapter Two.

1.4 Report Structure

Chapter Two of this report traces the historical evolution of Queensland's population landscape, providing a context within which contemporary patterns of rural and urban population change can be examined. Chapter Three provides an analysis of the changing rural and urban settlement patterns of Queensland between 1971 and 2001 using the data from the spatially consistent database discussed in the previous section. Chapter Four provides a further exploration of the population dynamics of inland Queensland with an emphasis on the changing fortunes of urban centres. In Chapter Five patterns of inter-regional migration are discussed. The selectivity of migration by age, sex and industry is examined to ascertain the degree to which certain segments of the rural population are moving. The impact of migration selectivity on the human capital of localities is then discussed. Chapter Six examines the ageing of the population in parts of rural and regional Queensland. The demographic implications of population ageing for rural communities and for service provision are explored. Chapter Seven presents a summary of the key findings and of the prospects and implications of demographic change in rural and regional Queensland.

2 Evolution of Queensland's Population Landscape

2.1 Introduction

As for Australia generally, the central fact of Queensland's population landscape is its small numbers relative to land area, providing a very low average population density (Australia, 2.4 persons per square kilometre; Queensland 2.0 persons per square kilometre, 2001 Census). Particularly away from the major metropolitan population concentrations, population sparsity poses severe challenges in almost all spheres of economic and social activity.

In addition to aggregate low population densities, population distributions in all mainland Australian states are characterised by two major dimensions, namely: extreme concentration within or near the dominant metropolis; and exceptionally high concentrations along narrow coastal zones. Although Queensland is (correctly) regarded as the most decentralised of the mainland states and the one with a significant dispersion of population across its vast interior, nevertheless its supposed dispersion and inland spread is only evident when compared with other Australian mainland states. On any international comparison, Queensland's population is highly concentrated and strongly coast-orientated. Furthermore, as elsewhere in Australia, these tendencies are becoming more pronounced.

2.2 Population Concentration/Dispersion

The only comprehensive interstate comparison of population concentration was undertaken by Holmes (1973). Figure 2.1 provides a Lorenz Curve analysis of cumulated percentage of population and territory by distance from state capital (1966 Census). At this macro-scale any change over the last 35 years would be very slight, generally with a slight downward displacement, with increasing concavity of curves, indicative of a continuing concentration.

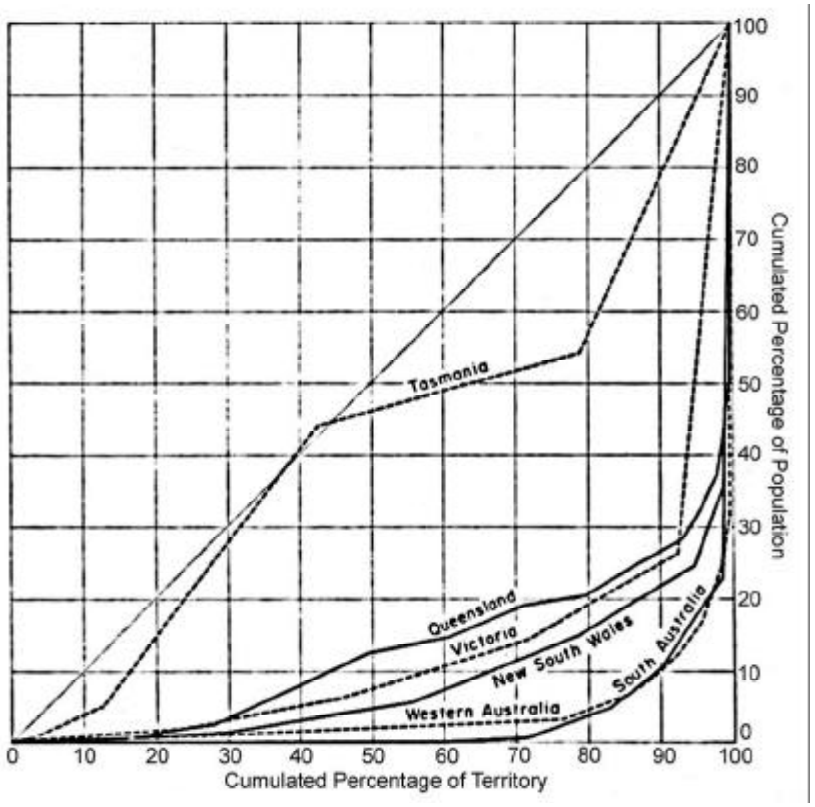


Figure 2.1: Australian States: Cumulative Percentage of Population and Territory for Zones Ordered by Distance from Capital Cities
Source: Holmes, 1973

This graph provides a useful overall indicator of relative concentration/dispersion. While, relatively, Queensland's population is reasonably highly concentrated, this is less so than for the other mainland states, and strikingly less so when compared with South Australia and Western Australia, two other states with vast land areas, and also extreme population concentration.

Queensland's distinctive position as the most decentralised state is more clearly revealed when measured on absolute, rather than relative, scales. Figure 2.2 shows the cumulated spread of population by distance from the capital city, for each Australian state, while Figure 2.3 shows cumulated land area by distance from the capital city. In both cases, the cumulation commences at the zone most distant from the capital. Queensland and Western Australia have the most extreme land areas remote from their capitals, a function of their large size, together with the highly off-centre location of their capital cities.

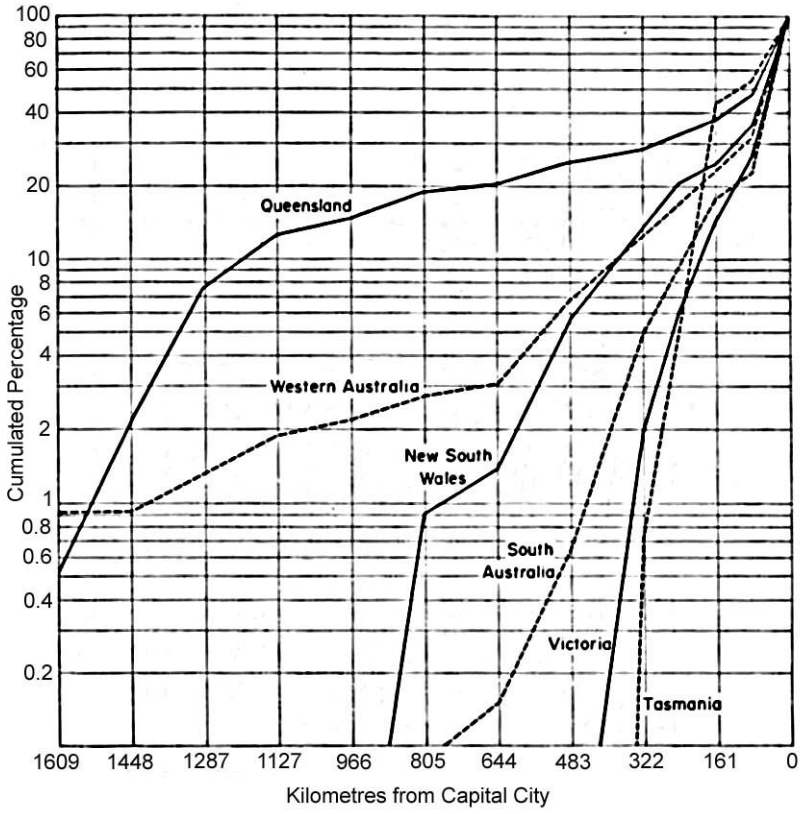


Figure 2.2: Australian States: Cumulative Percentage of Population by Distance from Capital City
Source: Holmes, 1973

Figure 2.2 reveals most clearly Queensland's much higher level of population dispersion away from the metropolis compared with all other states. For all distances from 80 to 1449 km from the metropolis, Queensland has a profile distinctly different from all other mainland states. 19.0 percent of the State's population was located over 805 km from the capital, compared with 2.7 percent, 0.9 percent, and 0.1 percent in Western Australia, New South Wales and South Australia respectively. These residents of north Queensland represent the only significant segment of Australia's population living beyond the shadow of a metropolis. Only beyond 1609 km is Western Australia's outlying population proportionately greater than Queensland's. At this distance, only 0.9 percent of Western Australia's population is resident, being a mere 7 600 persons in 1966.

A useful measure of the overall dispersion of a population is its *mean distance deviation*, or the mean distance between all members of a population and all other members. For the three largest mainland states the 1966 mean distance deviations were 439 m, 175, and 98 km for Queensland, Western Australia and South Australia respectively. Two randomly selected Queenslanders can be expected to be 2.5 and 4.5 times further apart than Western Australians and South Australians. These scores emphasise the small, compact extent of settled areas in South Australia and Western Australia, in contrast to the stretch of Queensland's major settled zones which extend for almost 1600 km along the coast, accompanied by a thin veneer of population and settlement over the inland pastoral zone, occupying almost the entire state.

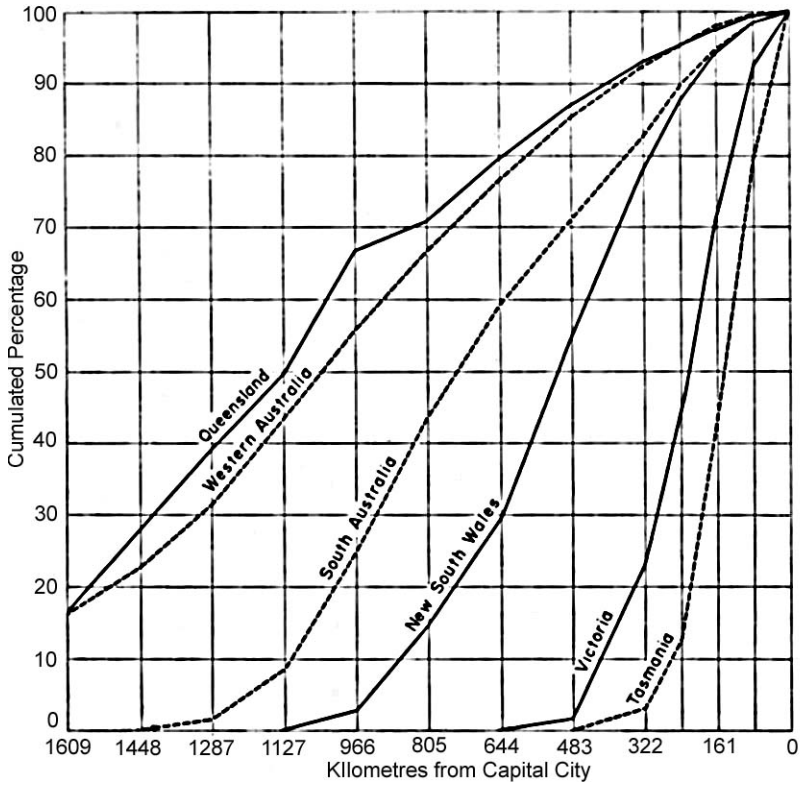


Figure 2.3: Australian States: Cumulative Percentage of Territory by Distance from Capital City
Source: Holmes, 1973

Compared with the other three large mainland states, New South Wales, South Australia and Western Australia, the modest dispersion of Queensland's population continues to pose challenges in the provision of basic services and in minimising cost burdens. While the economic and social merits of decentralization or even 'concentrated' decentralisation are difficult to assess, a strong case can be made that concentration has been a natural response to Australian circumstances, as was argued by Robinson:

> A notable characteristic of the economic geography of Australia is the fact that, while the country is about as large as the United States, it developed by discounting its physical bigness to a considerable degree, concentrating relatively meagre physical and human resources into compact areas. The heavy burden of transportation on a small population was minimized by developing the States as a number of independent sub-economies. Within these sub-economies, concentration of population and manufacturing industry in large metropolises minimized the costs of transportation between raw materials and industry, between one industry and another, and between manufacturer and consumer. Concentration of population produced its own economies of scale in the provision

> of services, including the provision of many services that would be impossible in a dispersed population (Robinson, A. 1963).

The burden of providing services to a more dispersed population has long been recognised in formulae developed by the Commonwealth Grants Commission. In the 1999 Review of Distribution, cost factors tied to population dispersion and to service delivery scale provided substantial redistributions to Queensland, exceeded only by those obtained for socio-demographic composition (Commonwealth Grants Commission 1999) .

2.3 The Coastal/Inland Dichotomy

As in the other three Australian states with extensive arid and semi-arid interiors, NSW, WA and SA, the dynamics of rural population change in Queensland have been historically shaped by contrasting potentials of the coast and the inland. To a degree unparalleled in any other major nation Australia's society and economy have been spatially dichotomised between a narrowly-confined but relatively well-endowed coastal strip and a vast under-endowed interior. For a discussion of this spatial dichotomy, see Rose (1966) and Holmes (1987; 1994).

Of the four mainland states with vast interiors it is the Queensland inland which has persistently offered the highest development expectations and has been most influential in shaping the State's development goals, but also thereby leading to the greatest mismatch between aspirations and outcomes. Other states have been less preoccupied with the development potential of their inland. In South Australia and Western Australia, extreme aridity quickly evaporated any such hopes other than from mineral resources. In New South Wales and Victoria, inland development emphasised dryland cropping and intensive irrigation which largely replicated the coastal system of settlement.

On the criterion of land under occupation, Queensland is clearly Australia's largest State, with an occupied area 36 percent greater than Western Australia. Queensland also has the highest proportion of its total area in privately-held landholdings. This is indicative of the widespread, if tenuous, capacity of the land to offer some return to extensive grazing use. It is this capacity which has helped to foster aspirations for closer settlement and inland development, even as recently as the mid-twentieth century.

2.3.1 Convergence: 1901-1960

As described in Holmes (1994), the State-sponsored credo of rural development received a substantial boost with Federation in 1901. The federal government constructed the umbrella of protectionism needed to shelter the highly interventionist policies of the states. While Victoria may well have gained greatest benefit from protection of manufacturing, Queensland's tropical coast was the primary target for the earliest federal ventures into farm protectionism. A sugar tariff was introduced in 1901, labour protectionism was established, with a timetable for the prohibition of Pacific Island labour and a reduced excise on cane cut by white labour was also introduced in 1901. The White Australia Policy was defended mainly as a means of excluding cheap non-European labour. These federal initiatives were needed to ensure the incorporation of the tropical coast within the wider Australian society, even though uncertainties about the long-term outcomes of European settlements in the tropics persisted until the 1920s.

Within this protectionist umbrella, the states were able to function as '...powerfully articulated management units' (Powell 1988, p. 317) in pursuit of economic and population growth, focusing mainly on rural development. It required a pragmatic, non-doctrinaire form of state

socialism, which, according to Butlin and others, involved a strongly entrenched relationship between public and private interests, based on three factors: governments using their high borrowing capacity to attract external capital and resources; direct state intervention in investment and marketing; and the state retaining a role as landlord over much of its territory (Butlin, Barnard & Pincus 1982).

While all states pursued these objectives, it was the two labour dominated states of New South Wales and Queensland where state investment and management were carried furthest. These also were the two states where rural closer settlement programmes were implemented most vigorously throughout much of their inland pastoral zones, leading to a much higher incidence of small, non-viable pastoral holdings than in other states

Queensland can most clearly be differentiated from the other states in the continuing primacy of agrarianism within the state's development policies and programmes throughout the long reign of Labor governments for all but three years from 1915 to 1957. This has been noted by various commentators and cogently argued by Gough (1964) and by Powell (1991). This agrarian doctrine, which provided the foundations for a rurally focused state socialism, was stated in no uncertain terms by Premier Forgan Smith in 1932.

> '...no matter how much secondary industries may be established in Queensland, this State will continue for all time to be a primary producing State. It is desirable that it should be so. Primary production is the natural occupation of mankind. No one would desire for this State the industrialised type of civilisation which exists in many countries to-day' (Quoted by Fitzgerald 1984, p. 181).

These words were not empty rhetoric. Queensland policies persistently favoured rural development and actively discouraged participation even in the post-World War II phase of immigration and industrialisation.

Backed by Colin Clark's views that post-war economic prosperity would be achieved through further pursuit of smallholdings and his advocacy of land settlement programmes capable of introducing a further 250,000 settlers (Powell 1991, p. 161), expectations remained unrealistically high concerning the capacity of the state and particularly the inland, to accommodate population growth. Typical of the official view is this paragraph (one of the few in heavy print) from a royal commission on land policy:

> 'The soundest land policy is that which will create the greatest number of permanently resident families, consistent with a reasonable way of life, and only closer settlement can offer this In short, the welfare of the inland is to be measured by the number of families it can be brought to support.
> ... Large properties do not, and have yet to demonstrate that they can, offer to more than a few of their employees the opportunity to fulfil man's natural destiny of marriage, home and family' (Crosser 1951, p. 10).

This vision was shared by others, as evidenced for example by the ambitious joint venture by the Queensland and British governments into large-scale agricultural production at Peak Downs. Designed to alleviate chronic post-war food shortages in Europe, the rapid demise of this project gave mixed evidence on agricultural potential and impediments to achieving it.

Expectations of a greater future for the inland were readily sustained by the modicum of success already achieved. By dint of a purposeful partnership between the state and the

pastoral (or agricultural) smallholder, a thin fabric of family holdings had been stitched together throughout the poplar-box woodlands, the mulga country and the Mitchell grasslands, with its frontiers impinging on the margins of the Channel Country, Barkly Tableland, Gulf and Peninsula Districts. These family farms were the lifeblood of the pastoral towns and inland railways all of which gave an impression of stable human settlement and a promise of further growth which were not matched in either South Australia or Western Australia. Periodic cycles of good seasons or high wool prices would always boost hopes, and would obliterate memories of previous hard times, while seasonal variability obscured any signs of declining productivity of the land. The chief impediments appeared to be lack of people and capital, both of which would be resolved in due course. The inland of Queensland continued to be a land of promise.

The state-sponsored credo of rural development ensured the sustained pursuit of rural subdivision, rural population growth and dispersion, urban development and the provision of production-related infrastructure, possibly well beyond that achievable under the free play of market forces. The State's role was not only as the sponsor of smallholder settlement but also as its guarantor during hard times, a matter of much greater importance in the inland with its high incidence of periodic distress, from both the weather and markets.

State sponsorship also established an exceptionally homogeneous society and economy across the farms and rural towns of both coastal and inland Queensland. In any other part of the world, the evolution of two such distinctive agricultural systems as tropical sugarcane cultivation and semi-arid pastoralism would have guaranteed markedly different modes of production, enterprise-scale, labour inputs, capital investment, settlement patterns and rural societies. Yet, in Queensland, the coastal sugar and dairying, as well as the inland pastoral production systems were moulded by interventionist governmental programmes into politico-socioeconomic systems with the following core attributes in common:

1) Rural production units comprising smallholder family farms of comparable income-earning capacity, capable of providing a 'living area' for a family.
2) Heavy reliance upon itinerant or seasonal contract workers to handle seasonal peak labour demands: cane-cutting and transport, cane crushing, shearing and wool transport.
3) Some reliance upon regular labour inputs from stationhands and farmworkers;
4) Rural towns with a high dependence upon a single rural production system, including a resident rural-focused, semi-itinerant work-force of shearers, fencers, contractors, shooters, cane-cutters, and mill-hands. There was also a significant group of state employees, particularly railway workers and teachers.
5) Very close affiliation of the rural labour force with one powerful union, the Australian Workers' Union.
6) A very tight nexus between the fortunes of the staple rural production system and the towns.
7) These fortunes in turn were closely tied to regulatory decisions on resource utilisation, infrastructure, marketing and farm support by the state government; critical resource decisions were tied to additional acreage assignments of sugar and/or the further subdivision of pastoral leases.
8) A continuing dominance by the Australian Labor Party, largely founded on a rural proletariat, but also with substantial support from small business and landholders.

Despite seasonal setbacks, inland pastoralism continued its steady progress until mid century with a peak in urban and rural populations in the 1950s. This was also the high-point in

pastoral prosperity, when the wool boom of the 1950s provided unimagined wealth, even to smallholders, and presented one final boost to the advocates of closer settlement. This high-point for the inland coincided with a period of decline along Queensland's south coast, which, with northern New South Wales had become Australia's most severe case of regional decline and entrenched rural poverty. The incapacity of sub-tropical dairy farming to acquire climatically-appropriate pasture technology was reinforced by marketing difficulties for milk products. In the 1950s the prosperity of inland Cunnamulla, Winton and Mitchell was in stark contrast to the abandoned shops and dilapidated, unpainted houses of coastal Yandina, Eumundi and Cooroy, which were surrounded by the broken-down paraphernalia of impoverished dairy farms.

The demise of subtropical butterfat dairying was a forewarning of the incapacity of governments to continue their role as initiators and guarantors of low-cost, smallholder rural settlement. While the first casualty was a coastal rural industry, the longer-term outcomes were to be far more disadvantageous to the inland.

2.3.2 Divergence: Post-1960

In discussing the period 1901-1960 it was appropriate first to scrutinize public policies, then policy foundations and, finally, outcomes, given the highly influential role of government policies in setting the pace, style and scale of rural development. For the post-1960 period, this sequence is reversed, with underlying trends being first discussed, then the differential regional outcomes, followed by governmental responses. This is in recognition of the diminished role of governments, increasingly forced into reactive, largely palliative, responses to the pressures enforcing sharply divergent regional change.

Regional divergence in Queensland has been so pronounced, the outcomes so spectacularly evident, and the immediate causes so readily apparent, that it is tempting to rest satisfied with seemingly obvious 'explanations': drought, land degradation, 'rock-bottom' wool prices, deteriorating terms of trade, high interest rates, loss of political influence, the snowballing effects of service withdrawal and cumulative decline in employment and population in the inland. Along the coast the obvious 'explanations' include: the growth of tourism, retirement and discretionary migration, increased leisure time and new modes of water-related leisure activities, new-comfort-inducing technologies for warmer climates and the image of the 'Sunshine State' along the coast.

These are only partial, proximate explanations, which fail to relate divergent regional trajectories in Queensland to the dynamics of change in 'post-industrial' societies. Yet Queensland's recent experience is one of the most striking global examples of differential regional restructuring in response to these wider global forces. In these respects Queensland reflects and magnifies the Australia-wide response.

Although now hackneyed and capable of misinterpretation, the term "post-industrial" is used here as an appropriate label for the major directional trends in western societies over the last three decades. Other commonly used terms are the information economy, advanced technology economy, service economy or the electronics economy, all primarily based upon the information technology revolution.

> 'It is changing our processes of production, and the goods and services produced; facilitating new goods and services, changing the nature of work and its organisation; and substituting information and knowledge for labour, materials, energy and land as prime factors of production. It is blurring the previous

> distinctions between manufacturing and service jobs, between employment, self-employment and informal activity, between work, education and leisure activities, and between male and female work roles' (Brotchie, Hall & Newton 1987, p. 15)

To this list could well have been added the growing concern for leisure and quality-of-life, while also allowing a relaxation of some of the formerly tight locational constraints imposed on workplace and home.

Impacts differ from one country to another. Advanced industrial nations have been heavily affected by the decline of traditional manufacturing and growth of high technology and service industries. While these are also of concern in this country, of prime importance for Australia, particularly for Queensland: are the reduced emphasis on land as a factor of production; the increased emphasis on leisure and quality-of–life values; and also the more footloose location of both home and work.

The discounting of land as a productive resource is tied to the reduced economic significance of raw materials within post-industrial societies. Also, within land-dependent production processes, especially in agriculture, land has become an input of diminishing significance as other inputs, such as chemicals, fertilisers, and the products of biotechnology become increasingly important. These human derived inputs facilitate intensification of production on the more favoured lands, especially land near major markets. Agricultural protectionism has reinforced these advantages, creating a cumulative spiral of overproduction in countries previously incapable of meeting their agricultural needs. Australia's traditional comparative advantage based upon large tracts of cheap land of low productivity, but suited to low-cost production, has been undermined. Queensland, as the extreme Australian example of vast land tracts of low productivity, is most exposed to this resource devaluation, particularly its inland plains.

The obverse in resource valuation has been the sharp upwards reappraisal of lands of high amenity value for residential, recreational and tourism uses. Trends in population, employment and investment in recent decades show that the Queensland coast is regarded as Australia's most highly endowed region, within a country whose coastline is regarded as among the world's most attractive.

For tropical and subtropical coastal Queensland, this has been a striking reworking of the image of suitability of European settlement held earlier in this century. In recent decades, the image of the tropics and subtropics has undergone a remarkable transformation, as work, leisure and general living conditions have become progressively more attuned to a warm climate. New technologies have largely eliminated the more arduous manual tasks, but, more importantly, refrigeration, air-conditioning and similar innovations have so ameliorated living conditions that people are switching their preferences away from cool towards warm, or even hot climates. This reversal has been promoted by new lifestyles, with emphasis on year-round outdoor living with prime attention to sunshine and water-based recreation including swimming pools, waterslides, surfing, sunbathing, boating, sailing, sailboarding and fishing.

Australia and the United States are the only two post-industrial nations encompassing a sufficiently wide range of climates to allow full rein to 'sunbelt' migration within their own borders. Thus the earlier climatic disadvantage imposed on coastal Queensland is increasingly being perceived as a major asset. Coastal Queensland is also finding that locational accessibility factors are increasingly working in its favour. Modern transport methods are breaking down the formerly high distance barriers from southern Australia as well as from

overseas. Transport networks, particularly airline networks, are being realigned so that north Queensland is now first port-of-call for many aircraft rather than final port on a long-sea journey.

Although attention has focused on tourism, retirement migration and certain footloose migrants as sources of economic and population growth, perhaps of greater long-term significance are the fundamental changes in the dynamics of internal migration, which are leading not only to a revaluation of migrant destinations but also are occurring in a context of reduced constraints on the location of both workplace and home. Both employer, employee and self-employed are acquiring greater freedom to choose residentially desirable locations, as evidenced not only in the momentum of sunbelt migration, but in the parallel, more ubiquitous process of counterurbanisation, as the previous advantages of metropolitan agglomeration have dissolved and urbanism takes a new form, involving '...a change in the consumption of urban space and the creation of new kinds of space' (Sant & Simons 1993, p. 114). Examples of new residential space are readily observed in coastal Queensland whether the canal estates of the Gold Coast, the man-made Sovereign Islands, the rural residential lots sprawling across its hinterland or the rainforest retreats near Kuranda or the Daintree.

The other major sector providing a significant boost to Australia's economy has been the growth in extraction, transportation and first stage processing of minerals and energy resources. In this area, again, Queensland has benefited, disproportionately above the average level of the other states, and, again the coast has captured most of the benefits. The most spectacular growth has been in coalmining, which is concentrated in the transitional sub-Coastal Zone, but with most of the benefits being captured by coastal towns, whether in transport, or in processing and power-generation, or in the highly lucrative economic activities servicing both the production and domestic consumption sectors of the coalfields (West et al. 1989).

The capacity of the coast to capture almost all of the economic and population growth created by inland resource ventures, is being further enhanced by the growing use of the fly-in fly-out option in supplying the workforce to, even major, long-term mining operations, such as the Kidston gold mine, where workers commute on a seven days-on, seven-days off basis from Cairns, 250 kilometres distant from the mine (Robinson, I. & Newton 1988, p. 331). This is yet another striking example of footloose residential location, even when tied to a locationally-immovable workplace. It opens up further possibilities for depopulating the inland.

2.4 Population Trends as Indicators of Regional Socioeconomic Trajectories

In comparing regional outcomes, the most useful single indicator is trend in population. The capacity of the inland to sustain a significant proportion of the State's population until mid-twentieth century is indicated in Table 2.1. The percentage of the State's population in the three inland Statistical Divisions, Darling Downs, South West and Central West, declined from 16.8 to 14.4 percent over the 46 year period from 1901 to 1947, a period of very substantial population growth. Even the two western inland Statistical Divisions, South-West and Central-West, experienced some population growth, albeit very modest, over this period.

Table 2.1: Percent of Population by Statistical Divisions, Queensland 1901, 1947, 2001

Statistical Divisions	1901	1947	2001
Brisbane	29.2	41.3	45.5
Moreton	9.1	8.2	20.0
Wide Bay-Burnett	12.6	9.6	6.5
Darling Downs	10.4	10.5	5.8
South West	3.7	2.4	0.7
Fitzroy	9.1	7.3	5.0
Central West	2.7	1.5	0.3
Mackay	3.7	3.8	3.8
Northern	10.2	6.9	5.2
Far North	7.9	7.2	6.1
North-West	1.4	1.3	1.0
Total	100.0	100.0	100.0

Source: Skinner, 1993, ABS 2001.

Table 2.1 shows that all three interior divisions have experienced a marked diminution in their share of the State's population in the second half of the twentieth Century, with their share being more than halved from 14.4 to 6.8 percent. For the two far inland divisions, the share of the State's population is less than one-third that of mid-twentieth century. While all other non-metropolitan Statistical Divisions, save Mackay, have also experienced declining shares, against the burgeoning population of the Brisbane and Moreton Statistical Divisions, none has experienced a proportionate decline comparable to the three inland divisions.

3 Differential Population Trends in Queensland 1971-2001

3.1 Introduction

In this chapter a detailed scrutiny of differential population trends is provided for the thirty-year period, 1971-2001. The basic data set is the quinquennial Census data for urban, rural and total population by local government areas and for localities with a population of 200 or more. Given the census frequencies, analysis of differential population trends can be undertaken at various time-scales. In this study, differential trends are analysed primarily at the thirty-year and ten-year time interval but with some attention to the local variability revealed in the five year intervals. Over these three different time-scales a systematic comparative analysis is presented based on distinctive settlement zones, namely Southeast, Coastal, Agricultural, Pastoral, Remote Interior and Remote Northern Zones. These zones are mapped in Figure 3.2 and described below.

Percentage changes over the thirty-year period for urban and rural populations in Local Government Areas are mapped in Figure 3.1. The thirty-year total and percentage changes for the State and for six different settlement zones are shown in Table 3.1 and graphed in Figure 3.3. Percentage changes for total, urban and rural populations, over the three ten-year time intervals, for the State and the six zones, are graphed in Figure 3.4 to Figure 3.6 and mapped for local government areas in Figure 3.13 to Figure 3.14. Variability in trends over the five-year time intervals are shown as line graphs, for each zone, in Figure 3.7 to Figure 3.12. Maps showing percentage changes at five year intervals are included in an Appendix. The subsequent discussion will be based on an interpretation of these figures and the table.

Over the thirty year period, the population of Queensland has doubled (an increase of 100.6 percent). The leading redistributional component in the growth has been the enduring sharp contrast between the coast and inland, revealed most strikingly in Figure 3.1. With few exceptions, both urban and rural populations in all coastal local government areas have experienced growth, with most growing rapidly. In marked contrast has been the widespread loss (or stability) of both urban and rural population across the entire interior.

Some leading elements in these regionally differentiated population trajectories are described in the analysis by settlement zones. Most striking are the exceptionally high differentials in population trends between zones. Over the thirty-year period, the population of Queensland doubled. Southeast Queensland was the major zone of rapid growth, increasing by 128.0% to encompass almost two-thirds of the State's population; the Coastal Zone grew by 91.4%, while the Agricultural Zone experienced only modest growth of 37.0% and the Pastoral Zone declined by 12.3%. Of the two minor zones, both with small population numbers, the population of the Remote Northern Zone more than doubled (see Table 3.1).

Notwithstanding this persistence in overall trend, there has been some shift in the shares of growth. The most notable has been the recent deceleration of growth in the Coastal Zone (see Figure 3.8), and its localisation into attractive seaside locations (see later). Also of note was the short lived growth spurt in the Agricultural Zone in the 1981-1991 decade, and the apparent recent move toward population stabilisation or modest growth in the Pastoral Zone, after prolonged decline (see Figure 3.4 and Figure 3.10).

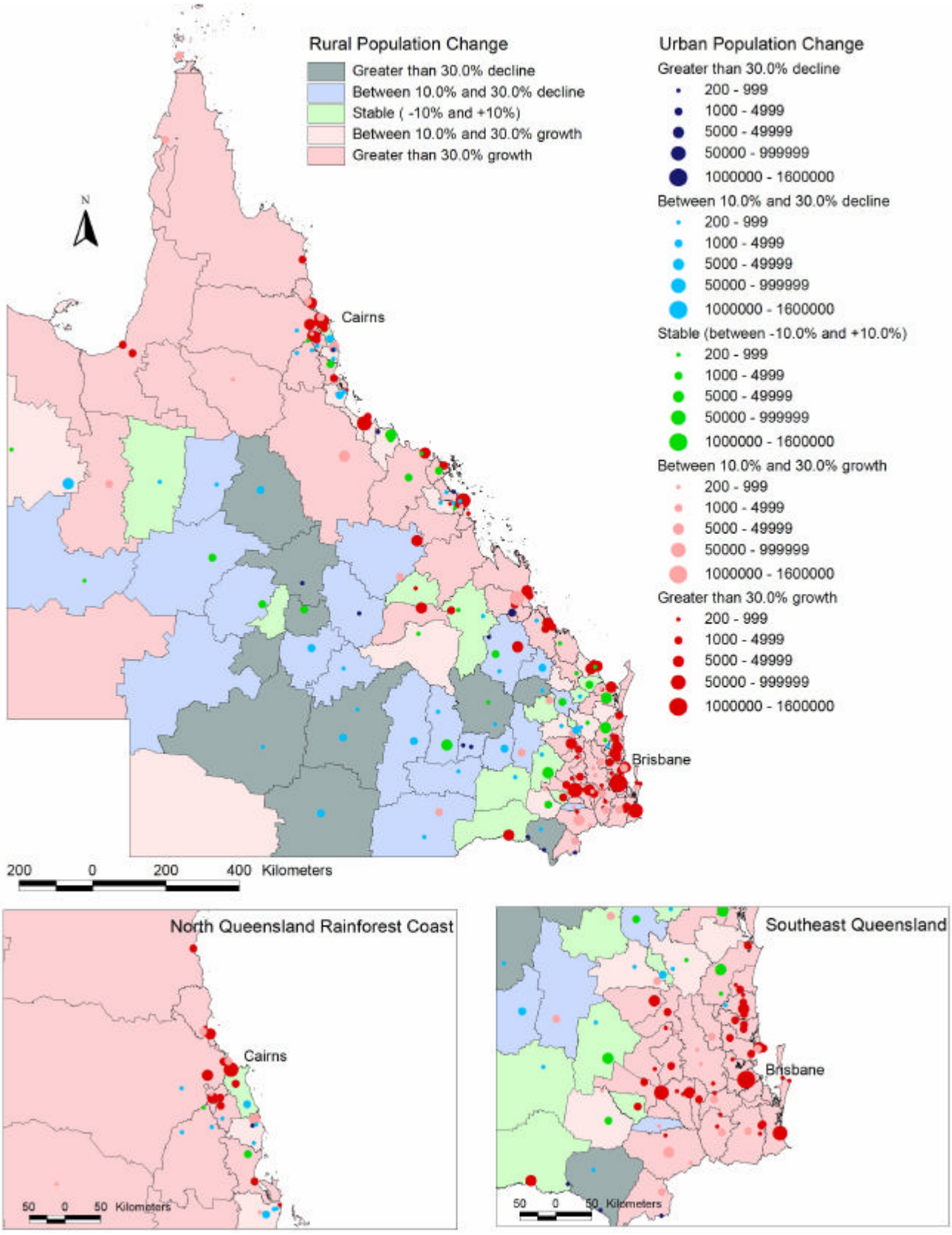


Figure 3.1: Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1971-2001

Time scale variability is more clearly revealed at five yearly intervals, as shown in the line graphs (Figure 3.7 to Figure 3.12) and the six maps in the Appendix. Most notable are short-term near-reversals of trends in the Pastoral Zone, with widespread decline in the 1971-1976 and 1991-1996 intercensal periods followed by reduced decline or stability in the subsequent five-year periods. As shown later, this zone is highly sensitive to seasonal factors, with this sensitivity being also evident in the more mobile sector of its workforce. Accordingly, any short-term upswings in population, as has occurred in the 1996-2001 period, need to be interpreted with care. Probably of more significance is the surprisingly pronounced deceleration of growth in the Coastal Zone for the 1996-2001 period, with an aggregate growth of only 4.6 percent, well below the growth of 13 percent or more in all save one of the five previous intercensal periods.

Locational variability is also evident in some zones, including some long-term persistence of divergent directions. This is most clearly revealed in the Coastal Zone, where rapid growth in favoured seaside locations is sharply differentiated from declining towns and rural areas reliant on traditional sectors, notably agriculture and manufacturing. Also noteworthy is the concentration of growth in the Agricultural Zone in the high-amenity eastern Darling Downs, together with highly localised growth near irrigation areas such as Emerald and Goondiwindi and the specialist coal-mining towns of the Central Highlands. Population differentials are scrutinised in more detail, by settlement zones, below.

3.2 Delineation of Settlement Zones for Demographic Analysis

While the population data by Statistical Divisions, outlined in the previous chapter, provide a useful initial overview of overall intrastate differentials in population trends, clearer insights can be gained by aggregating the local government data on a zonal basis, with these zones delineated by their postulated sensitivity to differential demographic and related socioeconomic trends. In *Country Matters: Social Atlas of Rural and Regional Australia* published in 2004 by the Rural Industries Research and Development Corporation, a five-zone categorisation is used, namely: Capital City/Metropolitan; Regional City; Populated Coastal; Populated Inland; and Remote. The statistical trend data by zones provides a useful Australia-wide overview even though the broad-brush interpretation of trends leads to some strange results. This is most notable in the persistent use of interval scores scaled against an Australia-wide non-metropolitan average, where this average is markedly influenced by the (surprising) inclusion of regional cities in the data set, as well as many other large provincial cities.

In any case, this zonal categorisation is much too generalised for an effective intrastate interpretation of differential long-term trends in Queensland. The ‘remote zone’ embraces over 80 percent of the land area of the State, including the more accessible and populated shires such as Dalrymple, Bowen, Peak Downs, Emerald and Bungil along with Diamantina, Burke, Cook and Mornington, which, from a Queensland perspective, more clearly fit the ‘remote’ designation.

Figure 3.2 provides an alternative zonal categorisation based on a mixed set of criteria, considered of relevance in understanding sociodemographic structure and trends for rural Queensland. These zones provide the framework for much of the subsequent analysis. The zonal categories are as follows:

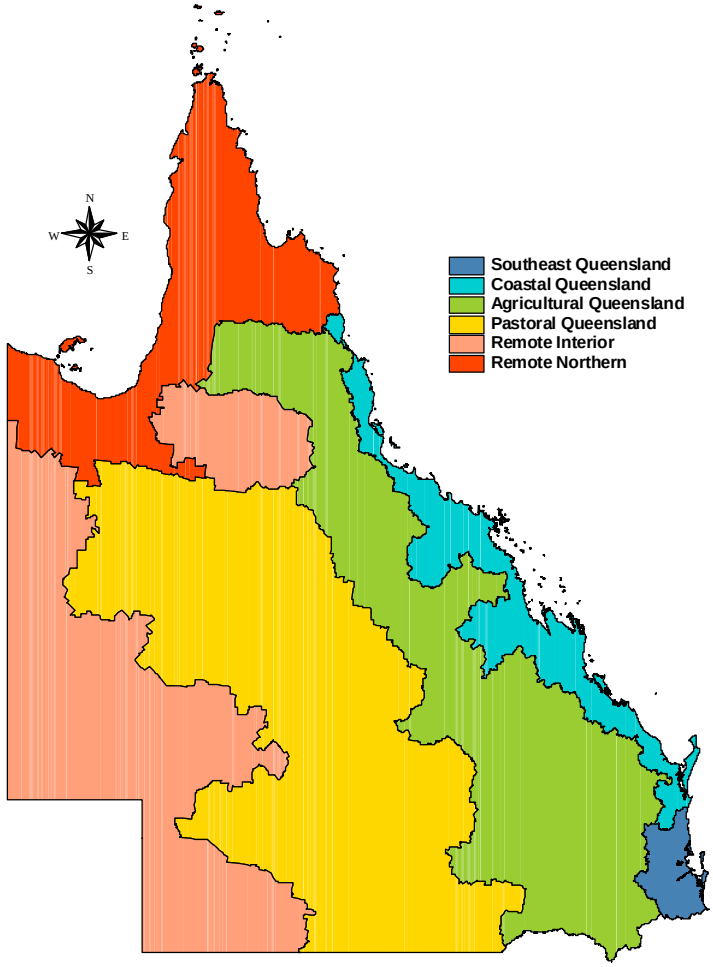


Figure 3.2: Settlement Zones, Queensland

Southeast Queensland: this zone coincides with the Brisbane and Moreton Statistical Divisions.

Coastal Queensland: this zone includes all well populated Local Government Areas with their population predominantly within 80km of the coast. It extends continuously from Cooloola to Douglas Shires.

Agricultural Queensland: this zone includes all non-coastal shires where more than one percent of the farm area is in crops. It also includes the sub coastal shires of Mareeba, Herberton, Dalrymple (and Charters Towers), Nebo, Eidsvold, and Perry, where higher rainfall has allowed localised intensification of pastoral production systems.

Pastoral Queensland: this zone includes all non-agricultural areas where the structure of both rural and urban settlement has been strongly influenced by closer settlement policies. The rural population is highly dispersed with rural densities between 10 and 80 km^2 per person. Rural holdings are worked by owner-operated family enterprises, with a workforce of one or two persons, reliant upon a thin fabric of rural services and on one-day return access to a small service town. This zone comprises the 'core' of inland Queensland. As shown later, it is this zone which has experienced the heaviest population declines and the greatest difficulty in maintaining a thinly-stretched settlement structure.

Remote Interior Queensland: The frontier of closer settlement made only limited inroads into this remote zone, where rural settlement is characterised by large, company-owned pastoral

stations, held in long-term leases, usually extending over thousands of square kilometres, and reliant on a transient workforce. Because of exceptionally low population densities and the high level of internal service infrastructure on these stations, there is very limited public infrastructure and restricted 'urban' development. This zone shows little evidence of the socioeconomic and demographic stresses encountered in the Pastoral Zone.

Remote Northern Queensland: This zone experiences the same attributes of remote location and limited infrastructure, encountered in the Remote Interior. However it differs in its more complex economic and sociodemographic structure, most notably in its high proportion of indigenous people and in the more modest economic significance of pastoralism, particularly in Cape York Peninsula.

3.3 Population Trends by Settlement Zones

Population change, 1971-2001, by settlement zones is shown in Table 3.1 and Figure 3.1, while the percentage changes for each of the three decades are shown for total, urban and rural populations in Figure 3.13, Figure 3.14 and Figure 3.15.

Table 3.1:Percentage Population Change by Settlement Zone: 1971-2001

			Population Change		% of Queensland's Population	
	1971	2001	Total	%	1971	2001
Southeast Queensland	1,040,423	2,372,104	1,331,681	128.0%	57.1%	64.9%
Coastal Queensland	438,354	839,139	400,785	91.4%	24.1%	23.0%
Agricultural Queensland	255,419	349,894	94,475	37.0%	14.0%	9.6%
Pastoral Queensland	43,683	38,327	-5,356	-12.3%	2.4%	1.0%
Remote Interior	30,056	25,862	-4,194	-14.0%	1.7%	0.7%
Remote Northern	13,071	28,359	15,288	117.0%	0.7%	0.8%
Queensland	1,821,006	3,653,685	1,832,679	100.6%	100.0%	100.0%

Source: ABS unpublished data

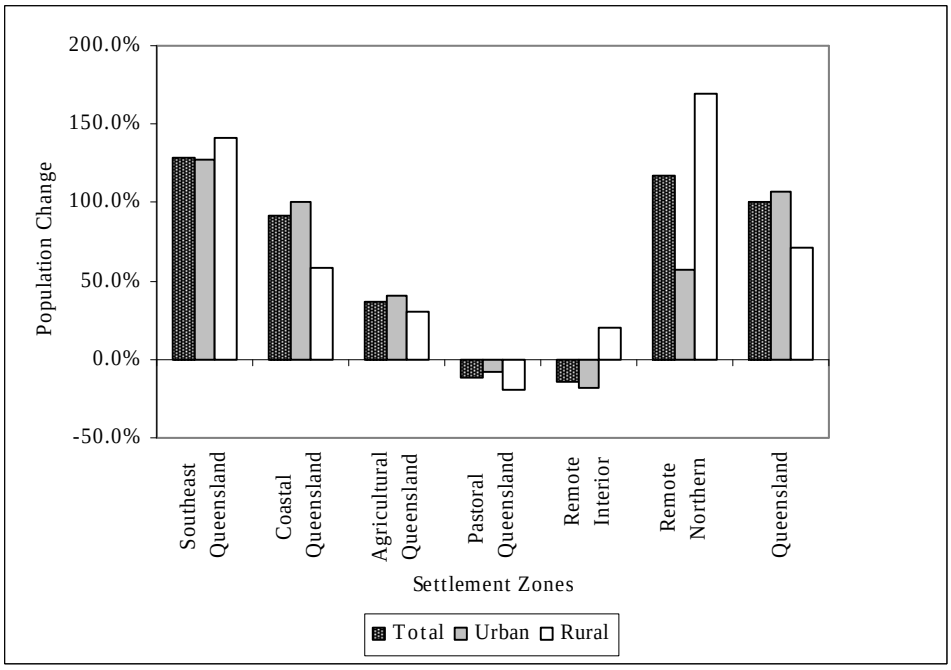


Figure 3.3: Percentage Change in Total, Urban and Rural Population, Settlement Zones, Queensland: 1971-2001

Source: ABS unpublished data

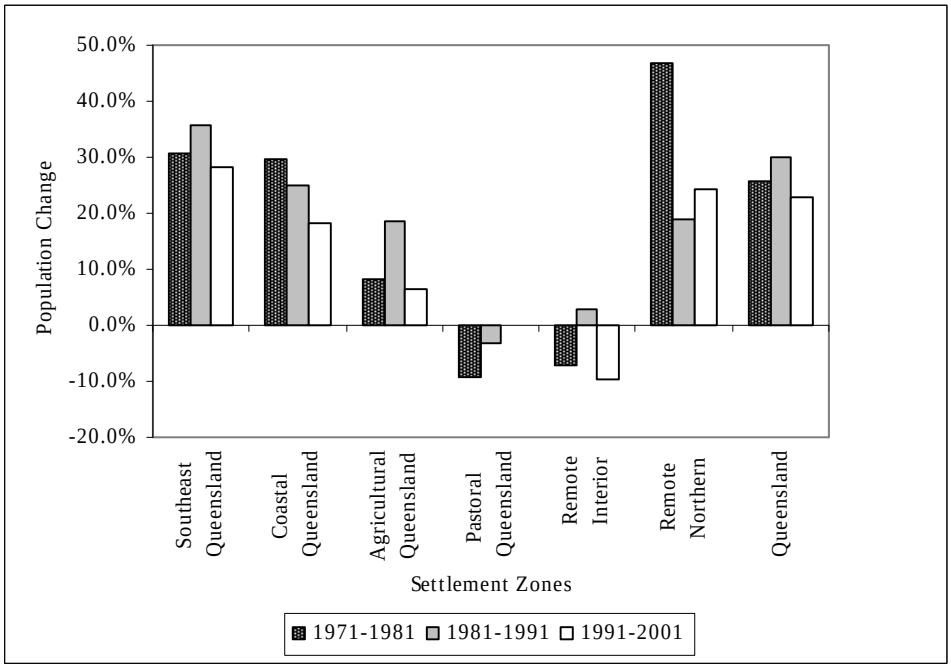


Figure 3.4: Percentage Total Population Change for Settlement Zones Queensland: 1971-1981;1981-1991;1991-2000
Source: ABS unpublished data

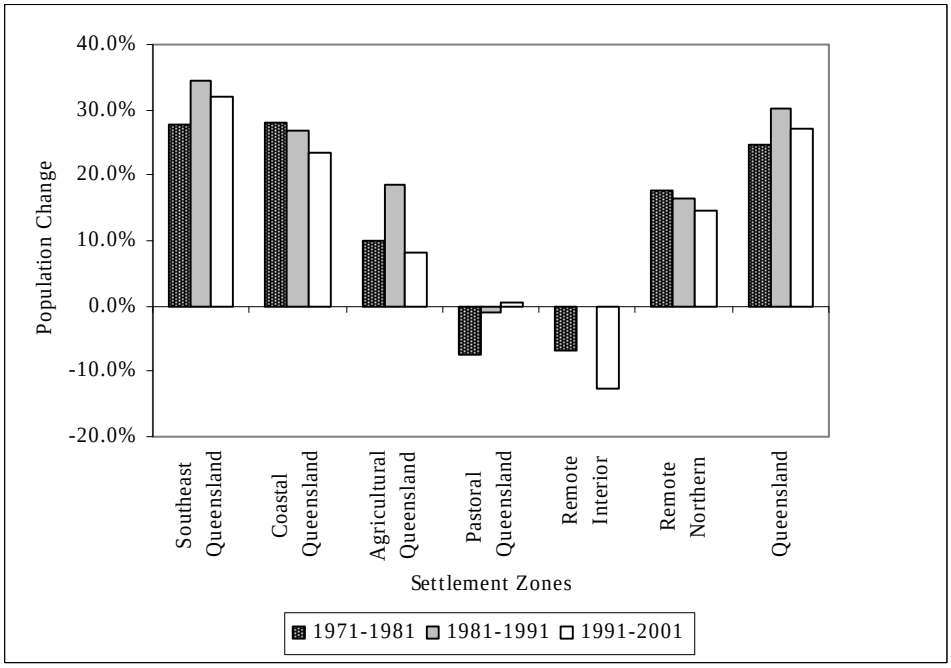


Figure 3.5: Percentage Urban Population Change for Settlement Zones Queensland: 1971-1981;1981-1991;1991-2000
Source: ABS unpublished data

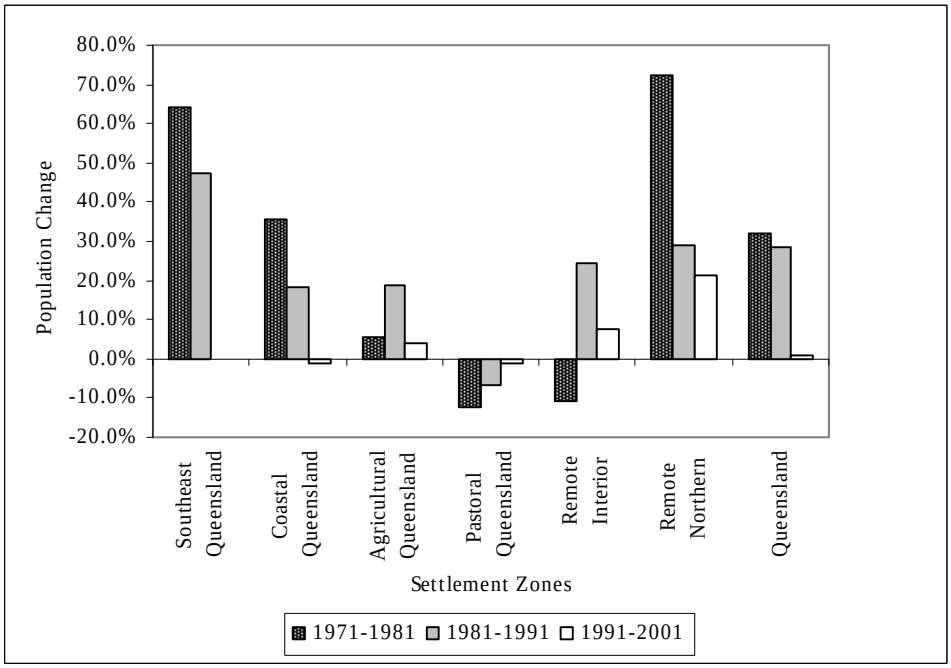


Figure 3.6: Percentage Rural Population Change for Settlement Zones Queensland: 1971-1981;1981-1991;1991-2000
Source: ABS unpublished data

In the analysis of trends within each zone, only limited scrutiny is given to the Southeast Zone and to the growth locales in the Coastal Zone. As shown later, population growth trends in these two zones are increasingly 'people-led' with residential desirability tied to amenity and accessibility considerations being increasingly important. In any case, their continuing growth raises a number of policy issues rather different from those being addressed in this report.

3.3.1 Southeast Queensland

Over the entire thirty-year period, this zone has been Australia's leading focus for population growth, driven primarily by internal migration. While the prime destinations have been the Brisbane metropolis and the emerging coastal cities of the Gold Coast and Sunshine Coast, spillover growth has extended to urban centres and rural populations over almost the entire zone. The supposed near-zero rural population growth for 1991-2001 is an artifact of reallocation of rural population to urban as localities exceed the 200 person threshold.

As shown in Figure 3.4, the overall growth rate was highest over the 1981-1991 decade, with a 35.8 percent ten-year increase. Growth rates for the other two decades were almost as high. As shown in Figure 3.7, the peak intercensal period was 1986-1991 with an average annual growth rate of 3.7 percent and the lowest 1996-2001 at 2.2 percent. For the 1971 decade, the Southeast and Coastal Zones ranked almost equally as the 'engines' of growth. In the subsequent two decades this role has increasingly been assumed by the Southeast as growth in the Coastal Zone has become more localised and its overall growth rate has decelerated. Growth rates for the entire State closely mirror those of Southeast Queensland, though at consistently lower levels. This is to be expected given that almost 65 percent of the State's population is now located in the Southeast.

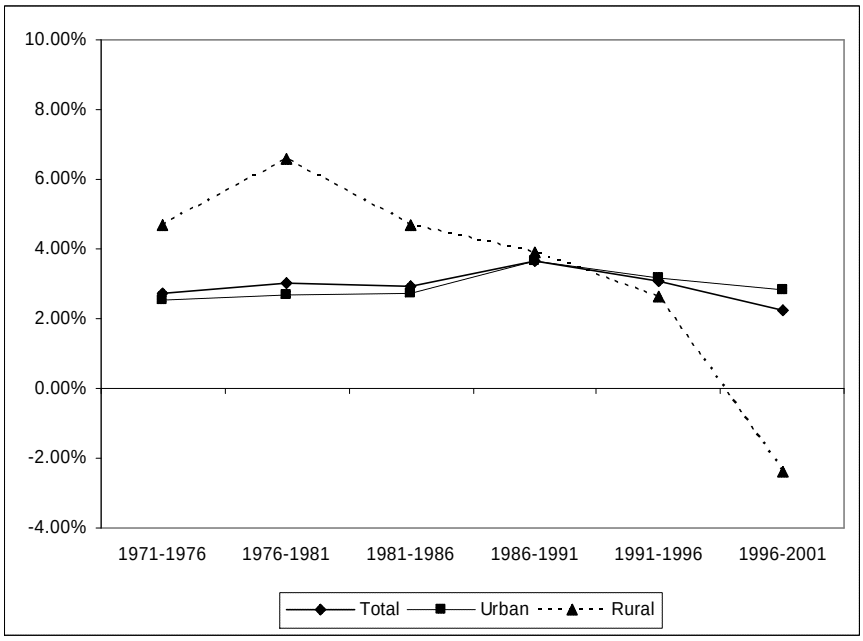


Figure 3.7: Average Annual Percentage Change for Total, Urban and Rural Population by 5 Year Intervals, Southeast Queensland
Source: ABS unpublished data

3.3.2 Coastal Queensland

The widely accepted perception, partly supported by the data on population change, is that, over the thirty-year period, the Coastal Zone has rivalled the Southeast as a migration destination, with comparably high growth rates. Overall population change for the zone is shown in Figure 3.3 and Table 3.1, indicating that, for each ten year period, overall percentage growth has decelerated from 29.6 to 24.9 and then 18.2, lagging further behind the Southeast. Most notable has been the unprecedented very sharp further drop in growth rates for the latest intercensal period. The zonal growth rate was only 4.6 percent, which contrasts markedly with intercensal growth exceeding 13 percent for all, save one, of the previous five intercensal periods, with an average rate of 12.9 percent (Figure 3.8).

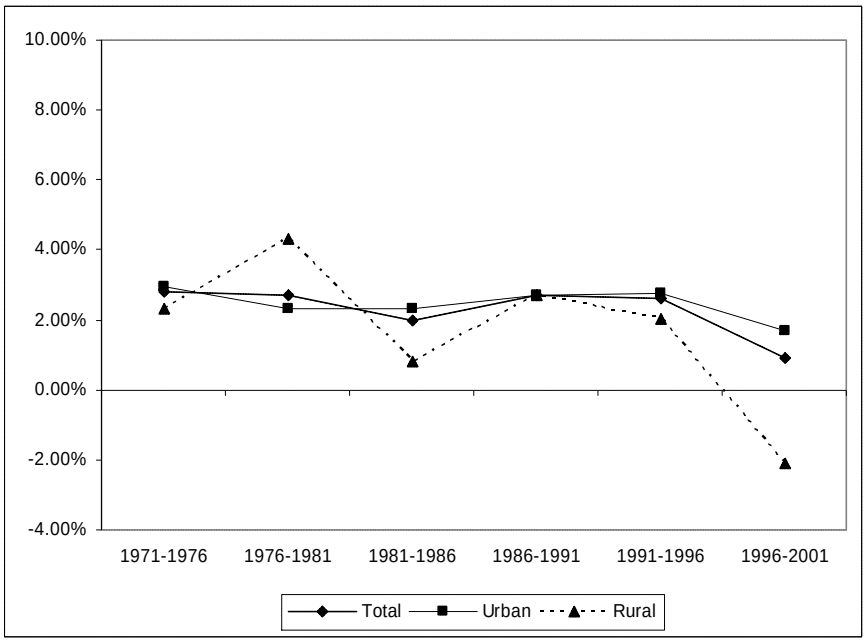


Figure 3.8: Average Annual Percentage Change for Total, Urban and Rural Population by 5 Year Intervals, Coastal Queensland Source: ABS unpublished data

A better understanding of population outcomes in this zone can be obtained by recognising its socioeconomic complexity, influencing divergent demographic outcomes with more pronounced structural contrasts than in any other zone. This complexity can partly be comprehended by examining trends in three distinct sub-zones, namely:

- Demographic 'hotspots' located on the coast, with persistent growth tied to tourism, retirees, lifestyle and other forms of 'sunbelt' migration. An inexact delineation of this zone includes the following local government areas: Douglas, Cairns, Cardwell, Whitsunday, Miriam Vale, Bargara (urban) and Hervey Bay
- Major Urban Centres: Townsville, Thuringowa, Mackay (urban), Broadsound (urban), Rockhampton, Livingstone, Gladstone, Calliope, Bundaberg (urban) and Maryborough (urban);
- All other local government areas (whole or part).

Population change for these sub-zones is shown in
Table 3.2. While all three sub-zones have experienced decelerating population growth over the thirty-year period, the demographic 'hot spots' continue to grow at a decennial rate above that ever achieved in the other two sub-zones. Deceleration has become more marked in the most recent intercensal period. Over this five-year period percentage growth rates were: 'Hot spots' 7.4 percent; Major Urban Centres 5.3 percent; and Other -1.5 percent. This overall decline in the rural areas and service towns of the Coastal Zone is a surprising outcome, the more so when the Pastoral Zone has experienced a 3.5 percent increase over the same five-year period.

Table 3.2: Population Change in Coastal Zone Sub Regions: 1971, 1981, 1991, 2001

					Total Change			**Percentage Change**			
	1971	*1981*	*1991*	*2001*	*1971-1981*	*1981-1991*	*1991-2001*	*1971-1981*	*1981-1991*	*1991-2001*	*1971-2001*
Hot Spots	76,479	121,040	184,019	246,155	44,561	62,979	62,136	58.3	52.0	33.8	221.9
Major Urban/ Industrial Centres	264,734	328,881	385,954	438,983	64,147	57,073	53,029	24.2	17.4	13.7	65.8
Other	97,141	118,276	139,721	154,001	21,135	21,445	14,280	21.8	18.1	10.2	58.5
Total	438,354	568,197	709,694	839,139	129,843	141,497	129,445	29.6	24.9	18.2	91.4

Source: ABS unpublished data

Accordingly, the dichotomy in population trends between coastal and inland, which was starkly delineated in the 1970s, while still evident, is less pronounced than previously. This is revealed, not only in Figure 3.1, but even more clearly in a comparison of the maps showing rural and urban population change for Queensland Local Government Areas for the 1971-1976 and 1996-2001 intervals located in the Appendix. In the 1971-76 map, almost all rural populations and most urban centres in the Pastoral and Remote Interior Zones experienced rapid population decline, while those in the Agricultural Zone fared only slightly better. Over the same five-year period, urban and rural populations in the Coastal Zone consistently increased population, save only for a few scattered areas reliant on agriculture.

By contrast, this formerly marked zonal dichotomy is much less evident for the five year period 1996-2001. A superficial inspection suggests that there is no zonal differentiation, with both coast and inland revealing a mix of growth, stability and decline in urban and rural populations. Overall growth on the coast is increasingly the outcome of continuing growth at or near major urban centres and coastal resorts: Cairns, Port Douglas, Townsville,

Whitsunday, Yeppoon and Hervey Bay. Growth in these "hot spots" is driven by people-led discretionary migration, tied either to tourism or residential relocation. The only major exceptions are population overspill from industrial Gladstone (Calliope) and two new mining towns (Broadsound).

In close proximity to growth centres are areas of long-term stability or decline. These localised bifurcations in demographic directions are most sharply delineated in the Wet Tropics and Pioneer Valley, with close juxtaposition of prime tourism/retirement/lifestyle destinations alongside declining sugar towns.

In the Wet Tropics, from Port Douglas to Lucinda, there are 23 coastal urban localities experiencing rapid growth, with Port Douglas the pace-setter, growing from 377 in 1971 to 5867 in 2001, an increase of 1440 percent. Immediately inland are the sugar towns, of which nine have experienced losses of at or near 20 percent. While mainly small centres, they also include larger towns such as Ingham (5787 persons in 1971) and Babinda (1560 in 1971).

A similar contrast in trends has occurred in the Pioneer Valley, where four small sugar towns lost over 20 percent of their population, in close proximity to fast-growing Mackay and coastal resorts.

Further south in the Rockhampton hinterland, Yeppoon-Emu Park and Mt Morgan had near comparable populations in 1971 (5192 compared with 3741). By 2001, the former had increased by 160 percent to reach 13, 484 while the latter had declined by 36 percent to 2397.

In the Wide Bay district, Maryborough and Hervey Bay have experienced a major shift in population relativities, with Hervey Bay increasing from 6,170 to 36,109 (an increase of 485 percent) while neighbouring Maryborough increased from 19,916 to 21,191 (an increase of only 6.4 percent).

As for the Southeast , we do not examine urban-rural differentials, primarily because of the complexities in scrutinising long-term trends, with many localities being reclassified as 'urban' on reaching the 200-person threshold. In any case an increasingly large proportion of the 'rural' hinterland can be regarded as urban overspill, with a high rural residential component.

3.3.3 Agricultural Zone

Population in this zone has grown by 37 percent over the thirty-year period, a seemingly healthy outcome when compared with the decline of over 12 percent in the Pastoral Zone. However, closer scrutiny shows that a large component of growth was confined to the 1981-1986 intercensal period, at an exceptional average rate of 2.6 percent per annum (Figure 3.9), with all other intercensal periods averaging less than one percent per annum. Also, as with the Coastal Zone, almost all of the growth has occurred in a few localised areas, hardly representative of the zone as a whole.

Population change in growth areas and the remainder of the zone are shown in Table 3.3. Numerically, the most important growth sub-zone is in the eastern Darling Downs, centred on Toowoomba; also extending continuously south to Warwick and the Granite Belt as well as north to the Southern Burnett towns centred on Kingaroy and Nanango. This extensive sub-zone has benefited from a complex of growth impulses, including expansion of the Toowoomba economy, new power generation and mining near Nanango and expansion of wine-making and tourism on the Granite Belt. However, it appears that, as with the major 'hot

spots;' in Southeast and Coastal Queensland, the most important impulse to growth is discretionary migration, with this reasonably attractive and accessible sub-zone being the destination of 'overspill' migration of people who find the coast either unpleasantly crowded or expensive (or both). This is a major consideration for retirees from rural areas, attracted by the relative peace, friendliness and cheaper housing of the pleasant small towns and attractive rural landscapes. Such is the explanation provided for the recent influx of population into Wondai, north of Kingaroy (Green 2005). This interpretation is supported by the near-universal growth of urban and rural populations in this sub-zone over the last two decades, reversing previous population losses. In addition to retirement migration, Toowoomba and Warwick have benefited from expansion of education services. As discussed in Chapter Five, Toowoomba may be the only large Queensland provincial centre which fits the 'sponge city' hypothesis in which large inland centres, primarily in New South Wales and Victoria, absorb inhabitants from their extensive rural hinterlands. Other growth areas have been the recently created coal-mining towns of the Bowen Basin and the expanding irrigation areas around Emerald and Goondiwindi.

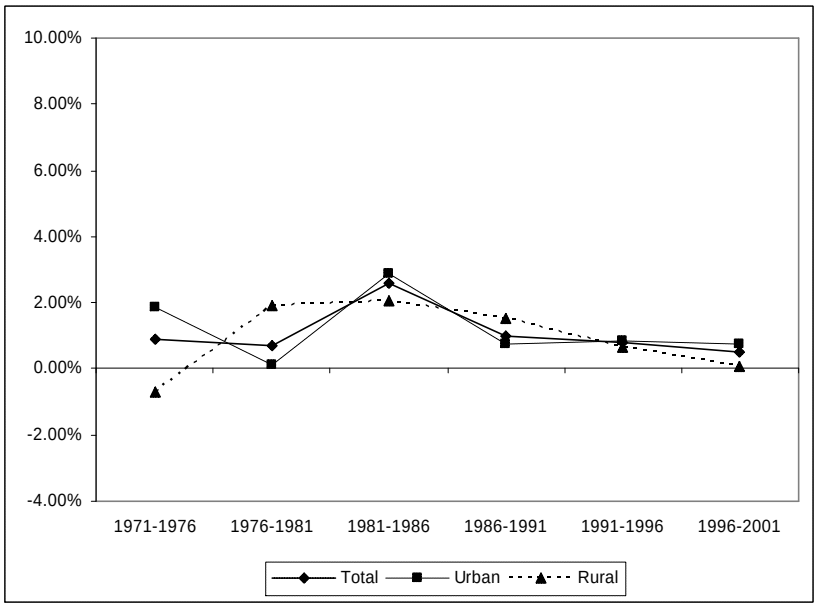


Figure 3.9: Average Annual Percentage Change for Total, Urban and Rural Population by 5 Year Intervals, Agricultural Queensland
Source: ABS unpublished data

Table 3.3: Population Change in Agricultural Sub Regions: 1971, 1981, 1991, 2001

					Total Change			Percentage Change			
	1971	*1981*	*1991*	*2001*	*1971-1981*	*1981-1991*	*1991-2001*	*1971-1981*	*1981-1991*	*1991-2001*	*1971-2001*
Growth sub-zone	113,809	135,740	176,896	195,353	21,931	41,156	18,457	19.3	30.3	10.4	71.6
Other	141,610	140,896	151,335	154,541	-714	10,439	3,206	-0.5	7.4	2.1	9.1
Total	255,419	276,636	328,231	349,894	21,217	51,595	21,663	8.3	18.7	6.6	37.0

Source: ABS unpublished data

Elsewhere, stagnation or decline was widespread, with population trends hardly different from those experienced in the Pastoral Zone. This is evidenced in a tally of the LGAs experiencing either decline, or modest growth, over the three decades. Local government areas experiencing a population loss of 20 percent or more were: Bendemere, Inglewood, Monto, Eidsvold, Taroom and Warroo, with the first two losing over 28 percent of their 1971 population. Areas losing between 10 and 20 percent were Bungil and Murilla, while Wambo,

Biggenden, Gayndah, Murgon and Clifton also lost population; areas which increased by less than 10 percent were Banana, Chinchilla, Mundubbera, Kilkivan, Wondai, Roma and Dalby. All of these have continued their traditional reliance on a mix of agricultural and pastoral activities. It appears that they have been subjected to the same structural forces as the Pastoral Zone, with the rural economy forced to adjust through drastic reductions in the workforce, and also with no countervailing strong amenity values capable of retaining redundant workers or attracting footloose newcomers, save for the recent modest reversal in the South Burnett.

3.3.4 Pastoral Zone

Of all four major zones, the Pastoral Zone is the most homogenous in socioeconomic structure, with its high dependence on the pastoral economy and related service activities, now also widely experiencing a modicum of low-volume, low-cost tourism. Accordingly, demographic trends are experienced reasonably consistently across the entire zone, with the trend being towards ongoing population decline, moderated by short intervening periods of modest 'recovery' with a partial return of workers displaced in the immediately prior period.

Throughout the late nineteenth century and the first half of the twentieth century, the Pastoral Zone provided one of the enduring foundations for the State's prosperity, with the final phase being the wealth-generating wool boom of the 1950s. Since then this zone has experienced a sharp reversal of fortunes, with prolonged economic decline and loss of population, making it the focus for ongoing public concern, leading to both short-term relief programmes in response to high-frequency 'droughts' as well as longer-term programmes for rural adjustment in response to entrenched problems of economic and environmental stress. Population data reveal two distinct phases of rapid population decline; the first, in the 1960s and early 1970s involved mainly the wage-earning rural workforce and the second phase, from the mid-1980s onwards, the grazing smallholders.

The first phase of severe loss was triggered by an unfortunate coincidence of drought, low wool prices and the introduction of a new pastoral award which sharply increased labour costs. Many family properties were suddenly forced to pay off the one or two full-time hands previously employed, and to cut back on part-time workers. This retrenchment of the wage earning sector led to an unprecedented rural population decline, generally between 30 and 50 percent, between 1966 and 1976 in most pastoral shires.

Not surprisingly, western pastoral towns also experienced rapid population decline, averaging an unprecedented 16 percent in the 1966-71 period, 3 percent in 1971-76 and 8 percent in 1976-81. The towns were hard hit by the out-migration of rural wage earners, many of whom who had wives and families living in the towns, and by the loss of the lower-income rural workers and small land holders, who, unlike most graziers, were almost entirely locally orientated in their expenditure.

Figure 3.10 reveals sharp, but inverse, reversals of urban and rural population trends for the first three intercensal periods up to 1981-1986. This was an extended period of extreme volatility in the fortunes of the pastoral industry, involving a rapid response in the numbers of workers (and population) on rural properties, in shedding or recruiting wage-earners in response to seasonal and economic conditions. There was a lagged response in urban populations, partly through inertial effects, but also enhanced by short-term, short-distance movements of displaced rural wage-earners into the nearest town, often subsequently moving further a field.

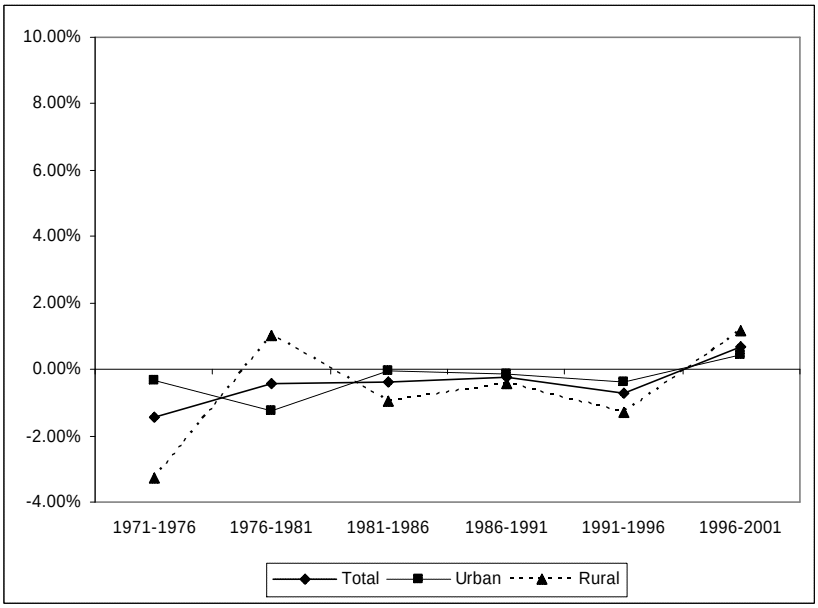


Figure 3.10: Average Annual Percentage Change for Total, Urban and Rural Population by 5 Year Intervals, Pastoral Queensland
Source: ABS unpublished data

Following the drastic downsizing of the rural workforce, there was a relative lull in population decline in the late 1980s. Although Western Queensland's population had seemingly been stripped down to the absolute minimum by previous losses, nevertheless further outmigration resumed, with the exodus led by landholders and their families, forced off by debt burdens well in excess of their depleted assets.

For the thirty-year period embraced in this study, all local government areas have experienced population declines, save only Balonne (+1.2%), Longreach (+1.6%) and Cloncurry (+33.3%). Cloncurry Shire's exceptional growth performance is almost entirely due to a scattering of mining developments in the shire. Of the 18 shires in the Pastoral Zone, eight have lost over 25% of their 1970 population, with Aramac Shire losing 36.5%. Ten shires have lost over 25% of their rural population, with Quilpie losing 41.7%. All save four towns have lost population with the heaviest losses being Jericho (-42.7%) and Aramac (-34.6%). Worthy of note are the four towns experiencing the most severe decline, at times exceeding the decline in their rural hinterlands. These are: Jericho, Aramac, Julia Creek and Dirranbandi. These towns appear to experience a combination of negative influences, the most notable being their location away from major tourist sites and their (relative) proximity to larger centres, reinforcing redundancy as service centres.

The only towns experiencing any significant growth have been St George (+27.8%) and Cloncurry (+24.1%), the former benefiting from expansion of irrigated agriculture and the latter from scattered mining ventures in its hinterland. Two other towns experienced a slight growth impulse over the thirty year period, with Longreach's population increasing by 6.3% and Barcaldine's by 2.2% seemingly with modest expansion in tourism and transport services countering declines in other sectors. For similar reasons, Winton held its decline to only -0.8 percent, which is in contrast to all other urban centres which experienced population losses exceeding 20%, save only Charleville (-10.9%) and Quilpie (-13.7%).

3.3.5 Remote Interior Zone

Located in the remote and southwest quarter of the state, this zone is characterised by extreme sparsity of population with rural population densities of less than one person per 100km^2. Low levels of demand preclude the provision of basic rural service infrastructure and the emergence of service towns. In this zone, the dominant rural production/settlement unit is the large cattle station, usually over 2000km^2 in extent, with over 10,000 cattle, and a workforce of 10 or more during the mustering season. Large size is an effective response to extreme isolation, with the rural production unit achieving reasonable self-sufficiency by incorporating most basic urban services with its internal organisational structure and relying on specialised, low-frequency links to major cities for external needs. Their large size and self-sufficiency is a logical response to isolation, but they contribute towards perpetuating isolation by stifling potential urban development locally (Holmes 1984).

Large stations have a truncated demographic structure, with a heavy reliance on a transient workforce comprising mainly young, single workers recruited from outside the region, reinforcing their role as economic, social and demographic enclaves reliant upon external links, beyond their immediate region. Their size and their reliance on a temporary workforce provides flexibility in responding to economic trends, a flexibility which has been notably absent in the Pastoral Zone.

Population counts for this zone are dominated by the large mining centre of Mt Isa. With Mt Isa excluded, the population total is very small, numbering 4559 in 1971, and with a modest increase of 17.1 percent to 5337 in 2001. Only five localities, Georgetown, Croydon, Camooweal, Boulia and Thargomindah achieve 'urban' status in 2001, the largest, Georgetown, with only 318 persons.

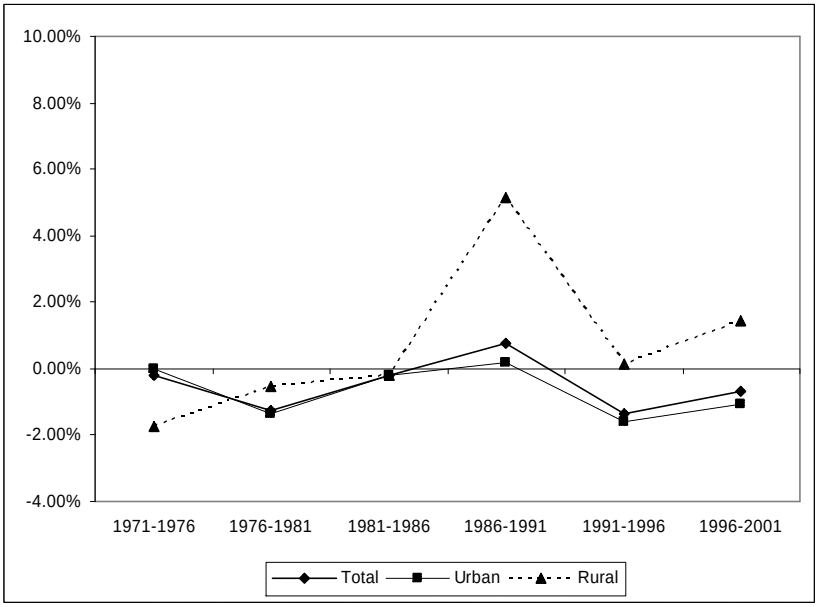


Figure 3.11: Average Annual Percentage Change for Total, Urban and Rural Population by 5 Year Intervals, Remote Interior
Source: ABS unpublished data

Mt Isa, with a population of 25, 497 in 1971 and 20, 525 in 2001 has a zonal population share of over 80 percent. Its population decline of almost five thousand outweighs the modest gain experienced in the remainder of this zone.

3.3.6 Remote Northern Zone

This zone is following a markedly different demographic trajectory, compared with the Remote Interior. It also reveals certain socioeconomic attributes divergent from elsewhere in the State, most notably in its very high indigenous component. Also, in contrast with other inland or remote zones, pastoralism is relatively less important and particularly so in Cape York Peninsula. There is a much higher reliance on welfare payments and on tourism.

Table 3.1 indicates an exceptionally high rate of population growth, which, at 117 percent for the thirty year period is exceeded only by Southeast Queensland. While undoubtedly this is a zone of substantial continuing growth, the supposedly exceptionally high growth rate for 1971-81 decade, shown in Figure 3.4 and Figure 3.12, may well be partially an artifact of undercounting in the 1971 Census, most notably in Cape York Peninsula and the Torres Strait islands. If the three urban centres, Weipa, Cooktown and Thursday Island, are excluded the balance of population counted in the present Cook, Aurukun and Torres Shires grew from 3800 in 1971 to 8182 in 1981 an increase of 115.3 percent. There is no evidence to suggest a substantial population increase through internal migration, nor could the initially higher fertility levels of the indigenous population generate this high rate of population growth. Nevertheless, even if some adjustment is made for a probable undercount in 1971, the data indicates a consistently high growth rate approximating at least 20 percent for each decade.

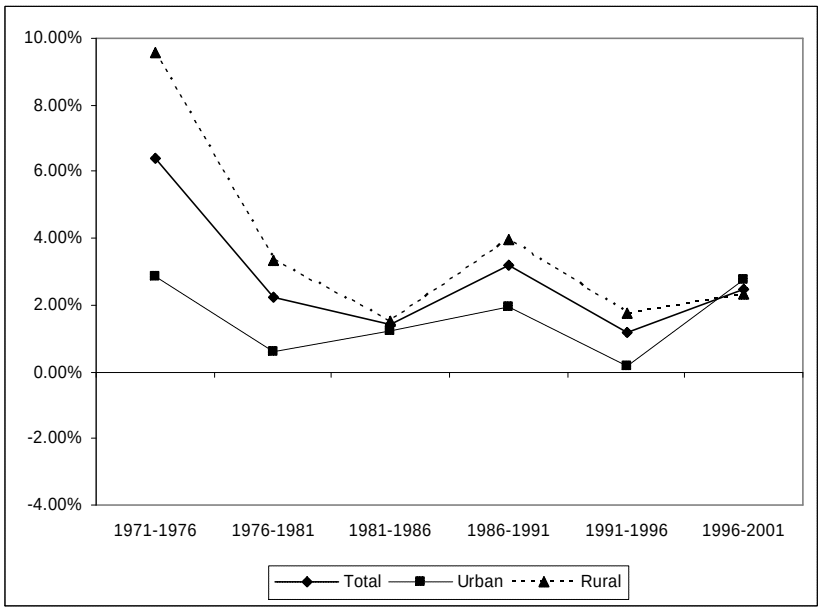


Figure 3.12: Average Annual Percentage Change for Total, Urban and Rural Population by 5 Year Intervals, Remote Northern Queensland
Source: ABS unpublished data

3.4 Zonal Differentials in Workforce Participation and Unemployment: Population Impacts

In interpreting past and predicting future population trends, recognition must be given to the marked divergence between high amenity coastal and low-amenity inland zones. Recent research has focussed on discretionary migration to high-amenity, coastal locations, often with a strong element of welfare dependency, with the most outstanding destination areas being the Richmond-Tweed and the Mid-North Coast Divisions in New South Wales and the Moreton, Wide Bay Burnett Divisions in Queensland. Population forecasting for these regions needs to consider a variety of influences beyond those tied solely to availability of jobs.

At the other end of the discretionary migration spectrum are the low amenity inland zones, capable of retaining their populations only when providing adequate job opportunities. In these zones, population trends are closely aligned to employment opportunities, driven primarily by changes in the extractive industries; notably agriculture (including pastoralism) and mining. Already in this chapter population changes in the Pastoral Zone have been closely linked to periods of stress and modest recovery in the pastoral industry.

This differential linkage to employment opportunities is well revealed in the AHURI Report on 'Population and Employment in Australia, 1986-1996' (Stimson, O'Connor & Shuaib 1998), where, for a variety of workforce attributes, expressed as ratios per 1000 resident population, the top twenty and the bottom twenty Statistical Divisions in Australia are listed. The three most relevant attributes, namely the ratios of full-time workers, are shown in Table 3.4.

This table provides strong supporting evidence on the increasingly important role of discretionary migration in influencing population trends. In Queensland, all three inland Statistical Divisions achieve exceptionally high national rankings in the ratio of full-time workers per 1000 resident population, a ranking they share with comparable remote regions elsewhere in Australia. The very high ratio for the South West, with negligible employment in mining, is striking, given that it is out-ranked only by two specialist mining regions, namely Western Australia's South Eastern (Kalgoorlie) and Pilbara Divisions. Also worth noting is the consistently high full-time worker ratios for many Queensland Statistical Divisions, including 8 out of the 20 national top rankings.

Table 3.4: Ratio of Workers per 1000 Resident Population in Top-Ranked and Bottom-Ranked Queensland Statistical Divisions: Australia, 1996

Workforce Component	**Statistical Divisions in Top Twenty Ranks**			**Statistical Divisions in Bottom Twenty Ranks**		
	Division	*Rank*	*Ratio*	*Division*	*Rank*	*Ratio*
Full-time Workers	South West	3	352	Wide Bay- Burnett	3	228
	North West	5	349	Moreton	9	247
	Central West	7	343			
	Mackay	9	319			
	Brisbane	13	307			
	Northern	15	302			
	Far North	16	301			
	Fitzroy	18	298			
Part-time Workers	Moreton	8	136	South West	3	109
	Brisbane	10	134	Central West	4	109
	Far North	14	132	Wide Bay-Burnett	5	110
				North West	9	114
				Fitzroy	10	116
				Darling Downs	13	117
				Mackay	20	120
Unemployed	Wide Bay –Burnett	3	61	North West	5	30
	Moreton	4	58	South West	8	32
				Central West	10	32
				Darling Downs	13	34
				Mackay	18	37
				Far North	20	39

Source: Stimson et al. 1998

A similar zonal pattern is revealed in the ratio of unemployed persons, in this case with the inland divisions achieving low rankings, again in keeping with remote divisions elsewhere in Australia. In these same divisions, the incidence of part-time employment is very low.

At the other end of the spectrum in employment ratios are the Moreton and Wide Bay-Burnett Divisions with the latter division being outranked only by the two New South Wales north coast divisions in its low ratio of full time workers and high ratio of unemployed. The lowly employment status of the Wide Bay-Burnett Division is further indicated by its low ratio of part-time workers, In this respect, it differs from the Moreton, Brisbane and Far North Divisions where part time employment is more readily available in various service industries.

These differentials in levels of workforce participation and employment, which are in turn closely linked to origins and destinations in discretionary migration, suggest that population forecasting for particular settlement zones needs to be based upon zonally-differentiated assumptions on the impulses to residential mobility.

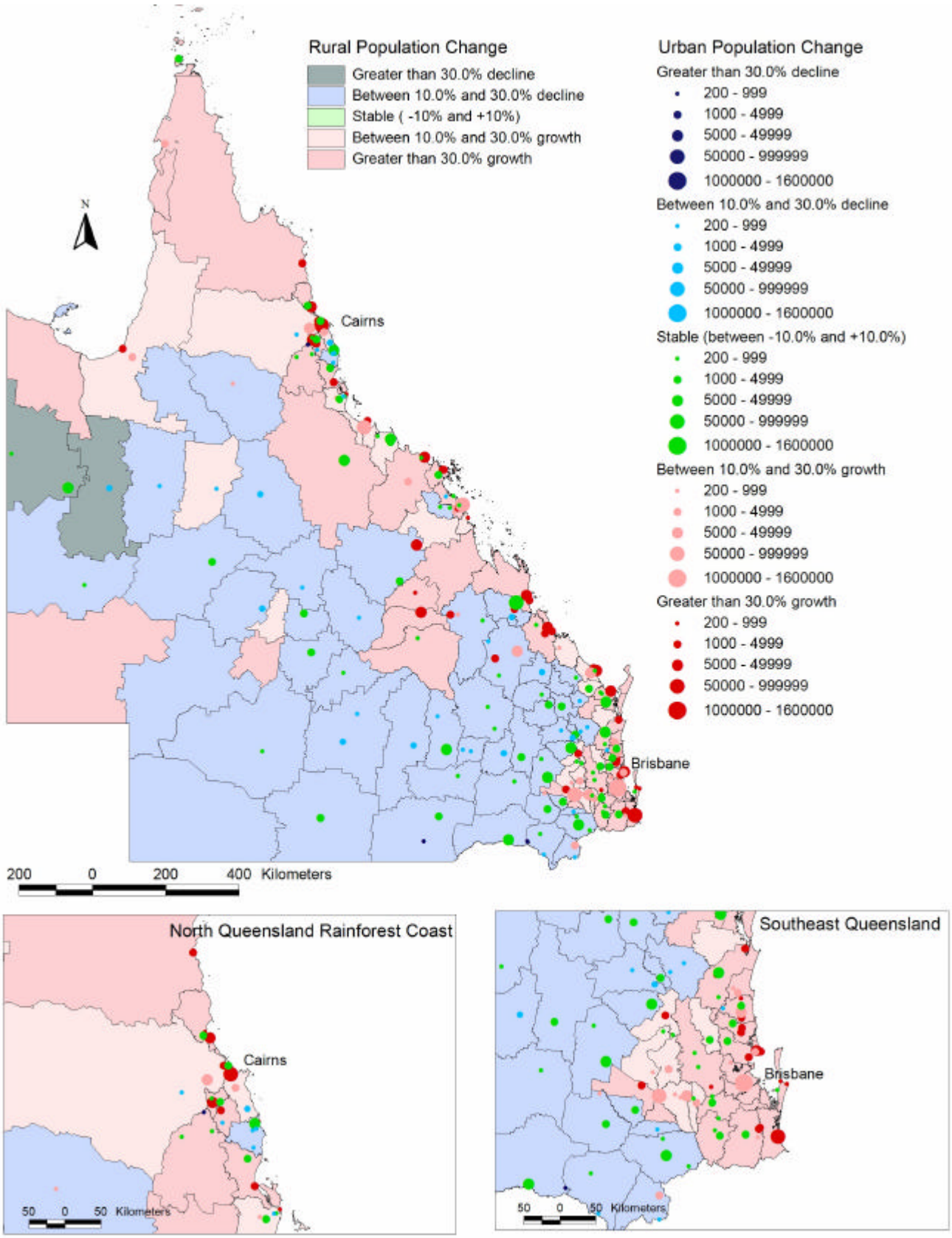


Figure 3.13: Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1971-1981
Source: ABS unpublished data

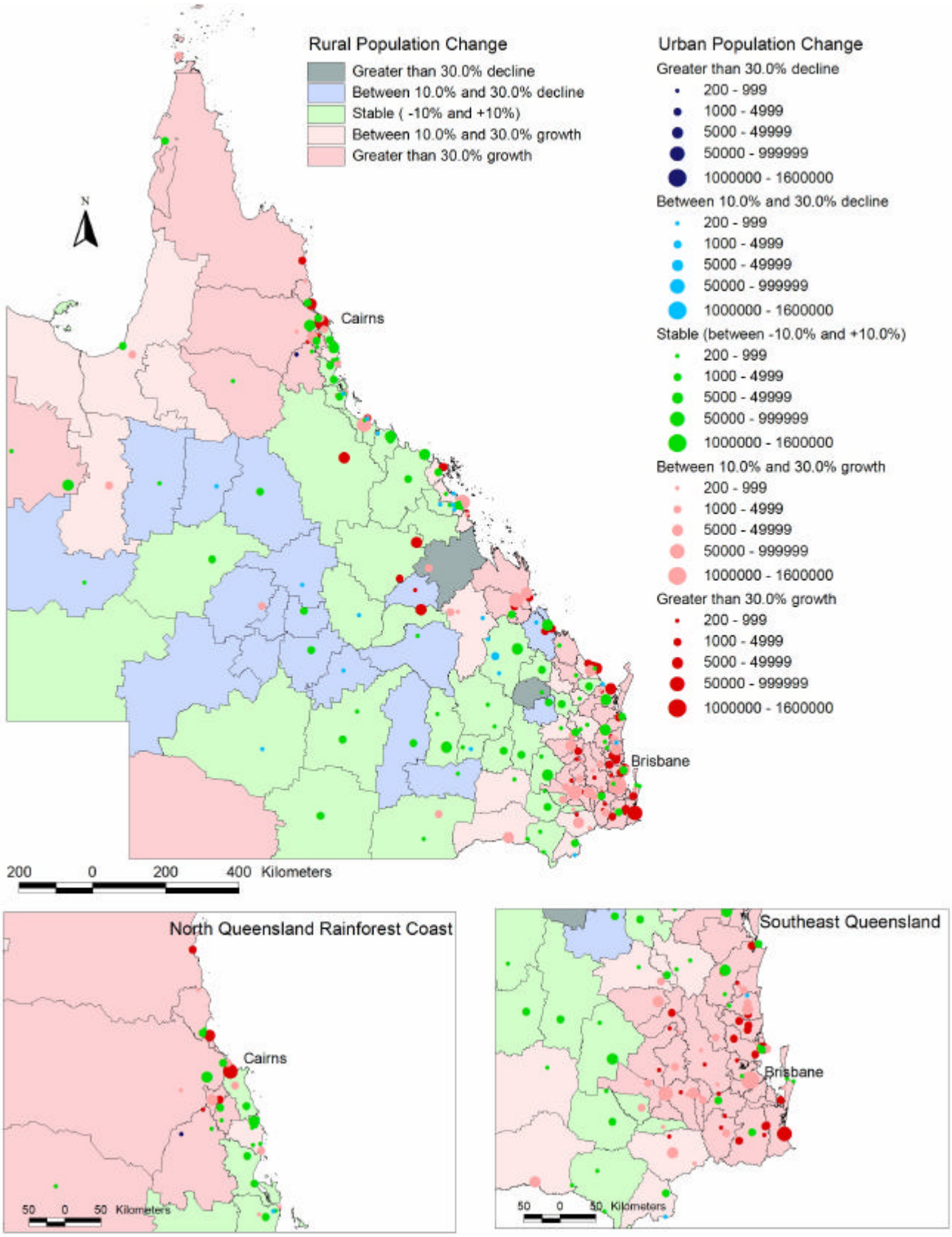


Figure 3.14: Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1981-1991
Source: ABS unpublished data

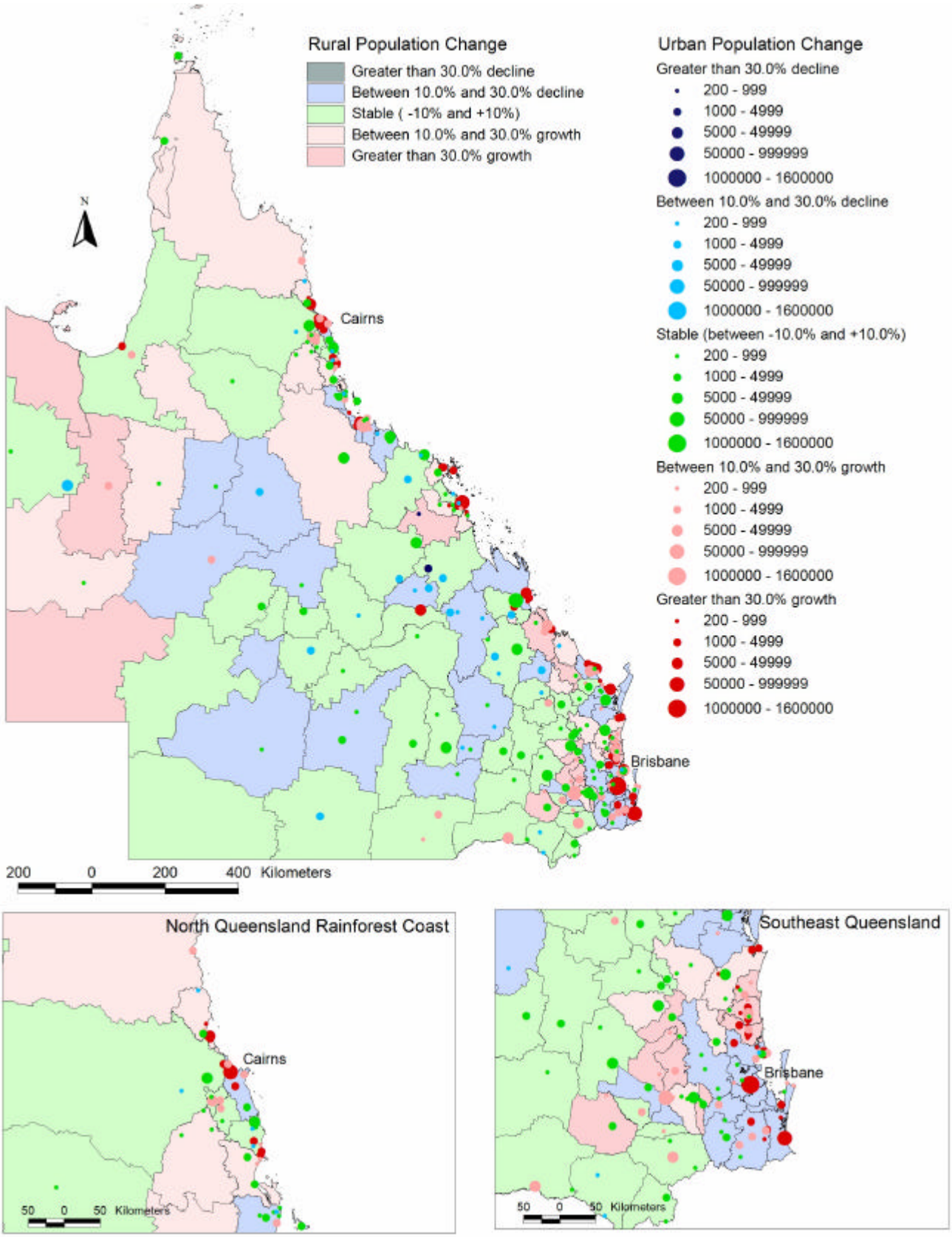


Figure 3.15: Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1991-2001
Source: ABS unpublished data

4 Population Dynamics of Urban Centres: Further Exploration

4.1 Introduction

Further insights into population directions in the Queensland urban system can be gained by a structural analysis of population change, extending beyond settlement zones. Some critical questions capable of being explored include:

- Is there any relationship between settlement size and trend? Specifically, are smaller centres more susceptible to population decline?
- Is there any relationship between population trends in urban centres and their immediate hinterlands?
- Does a town's economic base, as revealed in workforce structure have any influence on population directions?
- Does the town's location within the hierarchy influence population directions? Specifically, does competition from adjacent larger centres reinforce redundancy and decline?
- Is there a discernible positive benefit from location on a major transport/travel route and being a recognised tourist/travel destination?
- Is there any continuity in trend, such that population forecasts can be made, based on the recent past?

These questions can be pursued using univariate analysis, as with a simple correlation study of population trend against a single explanatory variable or by multivariate analysis, such as multiple regression. In this report, we rely upon a series of univariate analyses, which have the advantage of providing the simplest, most direct scrutiny of relationships, also allowing the identification of exceptional cases, identified as outliers. It must be recognised that this provides only restricted insights into complex relationships, but it does have the advantage of greater clarity than occurs with multivariate analysis.

Ahead of these correlation analyses, we provide an initial scrutiny of the towns experiencing the most rapid growth and the most rapid decline, for both the thirty-year and the most recent ten-year time interval. We seek to elicit the critical attributes of these towns, located at the upper and lower quintiles of the percentage population change distribution.

We exclude all towns in the Southeast and the Coastal Zones from this analysis. There are two persuasive reasons for this exclusion. Firstly, the designated tasks to be performed in this project are directed towards issues relating to population decline, to the relationship between towns and their rural hinterlands and specifically to population trends in inland Queensland. Secondly, any analysis of trends in urban population change over most of the Southeast and Coastal Zones is not susceptible to exploration using the questions specified above. Apart from the traditional service towns, identified in the previous chapter, urban trends in these two zones are propelled by an entirely different set of forces, tied to metropolitan expansion, growth of regional cities, tourism and to sunbelt migration, with a strong discretionary component.

Also excluded, save only in analysis of the relationship between population change and industrial structure of the workforce, are the towns in the Remote Interior and Remote Northern Zones. In the Remote Interior, the only major town is Mt Isa, where population change is mainly determined by the fortunes of the mining industry. In the Remote Northern

Zone urban change is primarily determined by factors unrelated to the economies of their rural hinterlands.

4.2 A Comparison of Upper and Lower Quintiles in Urban Growth

With all towns in the Southeast and the Coastal Zone excluded, together with the specialist mining towns, 82 towns remain for structural analysis of trends. Table 4.1 and Table 4.2 show the towns in the upper and lower quintiles for the periods 1971-2001 and 1991-2001, for the Agricultural, Pastoral, Remote Interior and Remote Northern Zones.

Table 4.1:Towns in the Upper and Lower Growth Quintile:1971-2001

Upper Quintile			Lower Quintile		
	2001 Size	% Growth		2001 Size	% Growth
Kuranda	1456	322.0%	Biggenden (L)	638	-24.3%
Karumba	1346	274.9%	Cunnamulla	1357	-24.8%
Cooktown	1638	176.2%	Julia Creek (L)	525	-25.0%
Goombungee (L)	662	131.5%	Wandoan (L)	396	-25.1%
Nanango	2625	121.1%	Hughenden	1424	-25.7%
Normanton	1447	94.2%	Dirranbandi (L)	526	-26.1%
Oakey	3469	74.8%	Richmond (L)	641	-26.5%
Crows Nest	1324	50.3%	Monto	1115	-28.8%
Goondiwindi	5491	48.6%	Mitchell	1011	-29.9%
Yarraman (L)	894	48.0%	Wallangarra (L)	399	-30.1%
Kingaroy	7193	46.1%	Wallumbilla (L)	228	-30.9%
Allora (L)	915	38.6%	Yuleba (L)	207	-33.7%
Biloela	5485	36.0%	Aramac (L)	323	-34.6%
Mareeba	6900	33.7%	Yelarbon (L)	220	-35.1%
Pittsworth	2339	31.0%	Texas (L)	701	-36.0%
Warwick	12011	29.1%	Baralaba (L)	260	-42.2%
Blackbutt (L)	561	28.7%	Alpha (L)	367	-42.7%

Table 4.2:Towns in the Upper and Lower Growth Quintile:1991-2001

Upper Quintile			Lower Quintile		
	2001 Size	% Growth		2001 Size	% Growth
Kuranda	1456	136.4%	Mitchell	1011	-8.2%
Karumba	1346	90.1%	Julia Creek (L)	525	-8.2%
Goondiwindi	5491	26.8%	Goomeri (L)	451	-9.6%
Cooktown	1638	22.1%	Theodore (L)	450	-10.4%
Normanton	1447	21.7%	Dimbulah (L)	409	-10.5%
Cloncurry	2748	19.0%	Hughenden	1424	-10.6%
Cecil Plains (L)	281	17.6%	Blackall	1404	-11.0%
Warwick	12011	15.6%	Duaringa (L)	258	-12.5%
Crows Nest	1324	14.7%	Inglewood (L)	867	-13.9%
Dirranbandi (L)	526	14.3%	Texas (L)	701	-14.1%
Winton	1321	14.3%	Wallumbilla (L)	228	-14.6%
Yarraman (L)	894	13.9%	Eidsvold (L)	495	-15.7%
Goombungee (L)	662	12.4%	Monto	1115	-16.7%
Mundubbera	1247	11.5%	Wandoan (L)	396	-18.0%
Pittsworth	2339	10.9%	Alpha (L)	367	-18.3%
St George	2781	10.7%	Cunnamulla	1357	-19.4%
Clifton (L)	887	10.2%	Bluff (L)	317	-23.4%

Of particular note in these two tables is the rarity of significant urban growth in either time period and the prevalence of decline, particularly when compared to the two coastal zones. For the thirty-year period, the lower threshold for entry into the growth quintile at +28.7 percent differs only marginally from the decline of -24.3 percent for entry into the lowest

quintile. A comparable marginal difference exists for the last ten-year period, with equivalent scores being +10.2 and -8.2 percent.

The prevalence of decline in the Agricultural and Pastoral Zones is indicated in Figure 4.1 and Figure 4.2. Of the 74 urban centres in these two zones retained in this analysis, 43 (or 58 percent) lost population over the thirty year period and 30 (or 51 percent) over the last ten years. For the thirty year period, exactly half of the towns experienced a loss of over 10 percent of its 1971 population.

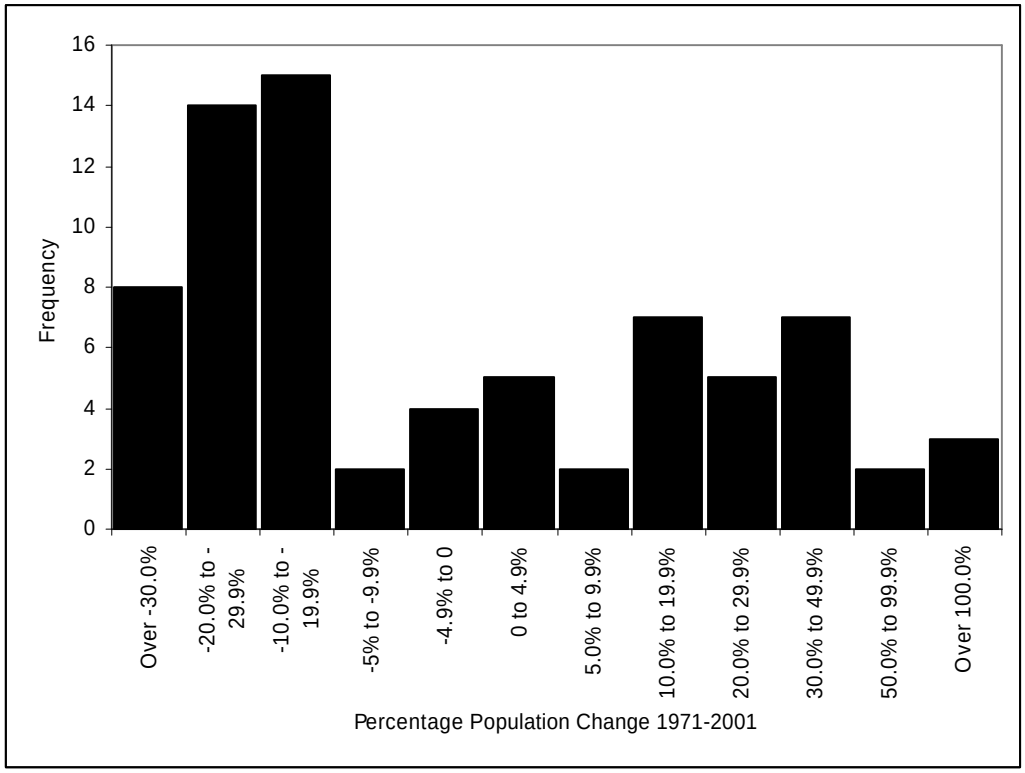


Figure 4.1: Frequency Distribution of Population Change for Urban Centres in Agricultural and Pastoral Zones: 1971-2001
Source: ABS 2001 unpublished data

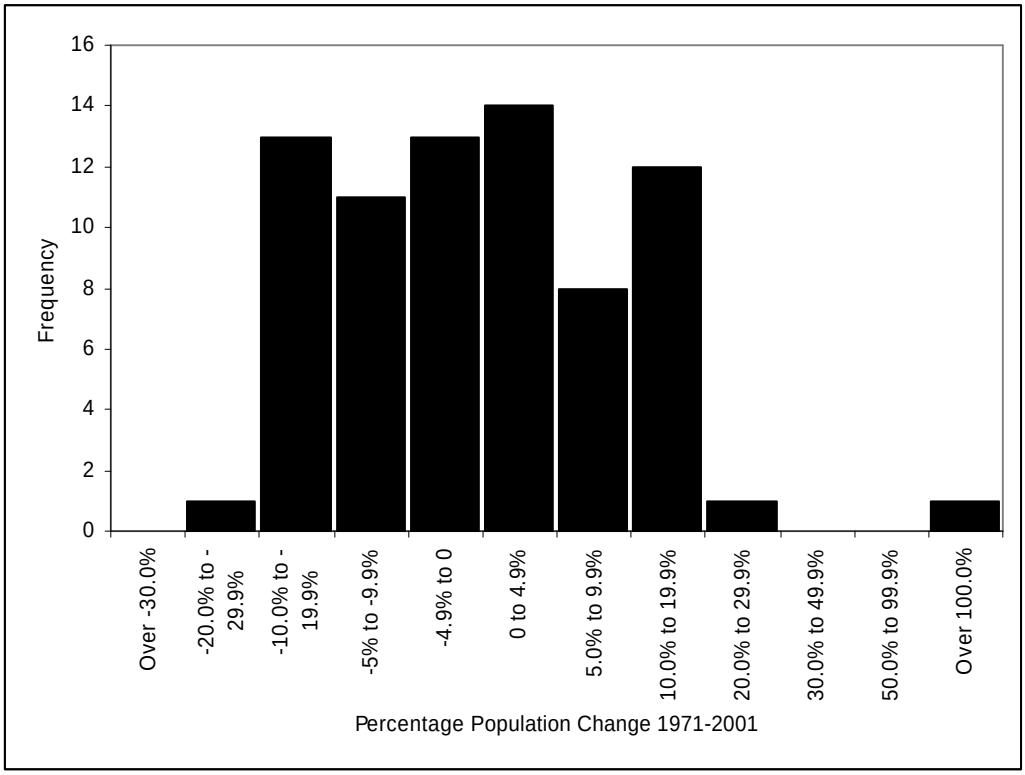


Figure 4.2: Frequency Distribution of Population Change for Urban Centres in Agricultural and Pastoral Zones: 1991-2001
Source: ABS 2001 unpublished data

Unlike the two coastal zones, where rapid growth is the norm, the few centres of rapid growth can be attributed to exceptional circumstances. For the thirty-year period, the top three centres, Kuranda, Karumba and Cooktown can hardly be regarded as typical of either rural or inland Queensland. A more complete examination suggests that, of the seventeen towns in the upper quintile, the growth of seven can be attributed to distinctive economic circumstances. These are: Karumba (fishing), Nanango, Yarraman, Kingaroy and Blackbutt (development of baseload power-stations and mining), Oakey (army air base) and Biloela (mining and irrigation). In most of these cases, the growth impetus has been short-lived, driven by a single development event. In five cases, high amenity values, more typical of the coast, have had a role, possibly enabling further long-term growth. These centres are Kuranda, and the eastern Darling Downs centres of Goombungee, Crows Nest, Allora and Warwick, all of which may benefit from retirees and other lifestyle migrants, not interested in coastal locations, for reasons of either cost or lifestyle preference. In only three cases, namely Goondiwindi, Biloela and Mareeba can a significant growth component by attributable to expansion in traditional rural economic sectors in their hinterlands. Also it is relevant to observe that not one of these centres is in the Pastoral Zone. Fourteen are in the Agricultural and three in the Remote Northern Zone.

On the other hand, eight of the centres experiencing the heaviest declines are in the Pastoral Zone, with the remainder in the Agricultural Zone. In all these centres, save only Wallangarra, urban decline can be tied to a near-total dependence on servicing a declining local and rural economy. In some cases, rural decline has been accelerated by exceptional local circumstances, including the demise of tobacco growing (Texas, Yelarbon), the near-demise of dairying (Monto) and an exodus from undersized soldier settlement blocks (Wandoan). In turn, this has been relayed into an accelerated urban decline.

For many of the smaller centres, urban redundancy appears to be reinforced by an increased leakage of local-orientated service activities to a larger centre, within feasible daily-return travel distance. This may well be the case for Alpha, Baralaba, Yelarbon, Aramac, Yuleba, Wallumbilla, Wallangarra, Mitchell, Dirranbandi, Wandoan, Julia Creek and Biggenden.

Table 4.2 shows a high level of consistency between the thirty year and the most recent ten-year trend, save for the emergence of four Pastoral towns into the upper quintile: Cloncurry, Dirranbandi, Winton and St. George. For Dirranbandi and St George, the expansion of irrigation, primarily for cotton-growing, has provided a significant impetus to recent growth. Dirranbandi is in the unique position of being in the lowest thirty-year but the highest ten-year quintile, indicating a marked reversal of economic and demographic fortunes.

Nanango and Oakey have experienced the opposite reversal of demographic trajectories. Both rank very highly in thirty-year population change, with growth of 121.2% and 74.8% respectively. In both cases the growth impetus was triggered by a specific development project, with little further growth. Nanango achieved growth of only 2.1% in the 1990s, with growth in the first intercensal period being followed by a decline of 3.2% in the 1996-2001 period. Oakey managed to grow by only 1.3 percent during the decade 1991-2001.

This analysis suggests that, for the towns of inland Queensland over the thirty year period, significant population growth was not achievable, save only for occasional exceptional expansion of the local resource base, as with irrigation (Goondiwindi, St George, Dirranbandi, Emerald and Biloela) or power generation (Nanango, Kingaroy, Yarraman and Blackbutt). Elsewhere, towns either barely managed to retain population numbers existing in 1971, or else experienced decline.

4.3 Employment Structure of Towns Experiencing Rapid Growth or Decline

For the same towns in the upper and lower quintiles of population change, shown in the previous section, we have analysed the 2001 Census data on employment structure. We have used six activity sectors, aggregating the 17 industry sectors as follows:

- Extractive: Agriculture, Forestry and Fishing; Mining.
- Transformative: Manufacturing; Utilities; Construction.
- Distributive: Wholesale; Retail; Transport; Communications.
- Producer Services: Finance and Insurance; Property and Business.
- Social Services: Public Administration and Defence; Education Services; Health and Community Services.
- Personal Services: Cultural and Recreational Services; Personal and Other Services; Accommodation, Cafes and Restaurant Services

Table 4.3: Employment Structure of Towns in Upper and Lower Growth Quintiles: 1971-200 and 1991-2001

	Extractive %	Transformative	Distributive	Producer	Social	Personal
Upper quintile: 1971-2001	9.2	23.1	26.4	7.0	22.9	11.3
Lower quintile: 1971-2001	13.0	15.5	28.3	3.9	29.8	9.5
Upper quintile: 1991-2001	13.4	20.1	25.5	5.8	23.4	11.8
Lower quintile: 1991-2001	13.4	17.0	29.9	3.2	27.3	9.2

Source: ABS 2001 unpublished data

Table 4.3 shows that towns experiencing the strongest growth, over both the longer and shorter time-intervals, have higher relative employment in the Transformative, Producer

Services and Personal Services sectors, while towns in decline have higher relative shares in the two traditional 'mainstay' rural service sectors in Distributive and Social Services sectors. Without detailed scrutiny of the changing employment structures in individual towns, it is not possible to assess the extent to which differences are indicative of the causes or the outcomes of population change. In particular, the greater reliance of declining towns on the traditional Distributive and Social Services (government) sectors may be a lagged (or inertial) outcome, as these sectors fail to respond immediately to changing demand levels. Also the three sectors with a greater share in growth centres may well be a mix of triggers and of responses to growth, with Construction, Utilities, Real Estate, Finance and Accommodation all being, at least in part, a response to urban growth, as well as potential driving forces.

4.4 Town Size and Population Change

The established wisdom is that there has been a long-term restructuring of the service-oriented urban system marked by the progressive decline of smaller centres, unable to compete with larger towns. This is a response to the increased mobility of the rural population, reductions in travel burdens, growing demand for specialised services and the pressure to increase business turnover to remain competitive.

A significant alternative trend has been the amenity-oriented counterurbanisation phenomenon, often selectively propelling population growth in accessible, attractive smaller centres. This has contributed to the small-town growth in the high-amenity Southeast and Coastal Zones, and also with significant spillover effects into the eastern Darling Downs, and, more recently, the Southern Burnett, already mentioned. However, across the remainder of the Agricultural and Pastoral Zone, there is little evidence of incipient amenity-orientated counterurbanisation.

For these two zones, the census data provide clear affirmation of the ongoing association between smaller size and population decline. This is demonstrated in a correlation analysis of population numbers, 1971, and percentage population change, 1971-2001. It emerges most clearly if towns in the upper quintile of percentage change are excluded, on the grounds that exceptional, localised economic impulses have propelled their growth regardless of size, as shown earlier. This relationship is clearly evident in a cross-tabulation of size and growth as shown in Table 4.4.

Table 4.4: Towns in the Agricultural and Pastoral Zones: Population 1971 and Percent Change 1971-2001

Percent Change	Population Numbers 1971				
	200-499	500-999	1000-1999	2000 or more	Total
Growth	2	3	4	8	17
Decline 0.1 to 19.9 %	3	11	5	2	21
Decline 20 % or more	8	9	5	0	22
Total	13	23	14	10	60

Note: Towns in the upper quintile of growth excluded
Source: ABS 2001 unpublished data

Towns experiencing the heaviest declines have already been listed in Table 4.1 It has been noted that most of these towns are small and located within daily-return travel range from a larger centre. Proximity to a larger centre clearly has negative impacts on the economy of the small town, undermining its uncompetitive business sector and failing to provide any 'overspill' population which could augment the residential role of the smaller town.

An entirely different trend is observable in the high-amenity, counterurbanisation zones, where proximity to a larger centre is a distinct advantage, enhancing the residential attractiveness of small townships. This is well evidenced in the small townships of the

Sunshine Coast hinterland, all with populations of less than 1000 in 1971, either astride or to the west of the railway, from Glass House Mountains north to Cooran. Of these 16 townships, 11 have experienced at least a doubling of their 1971 populations, and of the remaining five, four have increased by over 40 percent. Only one township, Kenilworth, has declined in population, with this decline being clearly an outcome of its lack of access to any major urban centre, within easy daily commuting range a reversal of the size/access relationship which prevails in the Agricultural and Pastoral Zones.

A similar dynamic of small-township growth has been experienced on the eastern edge of the Darling Downs. All of the 12 small townships, from Killarney north to Crows Nest, have increased in population by a least 17 percent since 1971, and eight by more than 40 percent, of which four have at least doubled in population. This trend is consistent with experience in other affluent western countries where attractive, accessible smaller townships have acquired a residential function for commuting workers as well as for those not in the workforce.

4.5 Intercensal Persistence of Population Change

The question of continuity (or persistence) in population change trajectories has been examined using the data on local government areas in the Agricultural and Pastoral Zones. Correlation coefficients were obtained between population changes over each pair of successive intercensal periods and also for successive ten-year intervals. The following coefficients were obtained:

Correlated Intercensal Periods	Correlation Coefficient
1971-1976 and 1976-1981	+0.20
1976-1981 and 1981-1986	+0.35
1981-1986 and 1986-1991	+0.33
1986-1991 and 1991-1996	+0.48
1991-1996 and 1996-2001	+0.13
Correlated Ten-Year Periods	
1971-1981 and 1981-1991	+0.38
1981-1991 and 1991-2001	+0.46

These coefficients were obtained by excluding a number of outliers, inconsistent with the overall trend. In each case, the outliers were influenced by atypical economic conditions, most notably by coalmining in the Bowen Basin. The following outliers were excluded in the five-year comparisons: 1971-1976, 1976-1981: Peak Downs, Emerald, Belyando, Duaringa and Nanango; 1976-1981, 1981-1986; Nebo; 1981-1986, 1986-1991: Nebo; 1986-1991, 1991-1996: Peak Downs; 1991-1996. 1996-2001: Millmerran, Kolan. For the two ten-year periods, excluded outliers were: 1971-1981, 1981-1991; Nebo; 1981-1991, 1991-2001; Peak Downs, Nebo.

What is most striking about these results is the low association in patterns of growth from one year to the next. There is little evidence of continuity in patterns and trends, even with the major outliers excluded.

4.6 Correlations between Rural and Urban Population Change

For local government areas in the Agricultural and Pastoral Zones, the relationship between rural and urban population trends within local government areas was examined for the thirty-

year period, 1971-2001. With one outlier, Herberton, excluded, a correlation of +0.78 was obtained indicating a very close continuing linkage between the fortunes of towns and their rural hinterlands, in these two zones.

This relationship can be scrutinised further by listing towns which are 'over performers' and 'under performers' relative to the rural population trend in the same local government area. Towns which show a significantly more positive population trend than that of their immediate hinterland merit further study. These towns are shown in Table 4.5.

Table 4.5: Urban Centres with a Population Trend Significantly More Positive than the Rural Population in their Local Government Areas: 1971-2001

Over 30 percentage points higher	20 to 29.9 percentage points higher	10 to 19.9 percentage points higher
Goondiwindi	Barcaldine	Cunnamulla (Paroo)
Pittsworth	Charleville (Murweh)	Eidsvold
	Chinchilla	Gayndah
	Clifton	Surat (Waroo)
	Longreach	Taroom
	Mundubbera	Winton
	Quilpie	
	St George (Balonne)	

Source: ABS 2001 unpublished data

Of these 'over performers', a significant group provide services over a wider region, extending beyond their local government areas. These include Goondiwindi, Charleville, Barcaldine, Longreach and Quilpie. Linked to this growth is an apparent growth in tourism and travel services, most notably at Barcaldine, Longreach and Winton. A second important group are those towns providing specialist services to important irrigation hinterlands primarily for cotton (Goondiwindi, St George, Pittsworth) or horticulture (Chinchilla, Mundubbera, Gayndah). Cunnamulla's population decline has been mitigated by an influx of indigenous people. Of the remaining four, only in Clifton has the urban population increased, while Eidsvold, Surat (Warroo) and Taroom managed to avoid the heavy losses experienced in their rural sectors. At least two of the towns known to the authors, are characterised by energetic, enterprising community leadership.

The 'under performers' are shown in Table 4.6. In this list, it is relevant to identify those towns which did experience growth, but were outpaced by an exceptionally rapid growth in their rural hinterlands. These included the following, in which the percentage urban and rural growth is shown in brackets: Nanango (96, 211), Charters Towers (13, 69), Gin Gin (4, 101), Mareeba (47, 63), Cloncurry (24, 47), Stanthorpe (10, 31), Millmerran (6, 20). Four Southern Burnett Towns showed a consistent trend of stability or decline against a background of modest rural growth: Wondai (2, 12), Murgon (-13, 6), Kilkivan (-13, 13) and Biggenden (-24, 6), as did Springsure (-6, 20). The remaining three towns all experienced greater proportionate losses than their rural populations: Monto (-29, -24), Julia Creek (-25, -2) and Alpha (-43, -16). Of these, Monto has recently been scrutinised as a case study into issues relating to community sustainability (Herbert-Cheshire & Lawrence 2003).

Table 4.6: Urban Centres with a Population Trend Significantly Less Positive that the Rural Population in their Local Government Area: 1971-2001

Over 20 percentage points lower	10 to 19.9 percentage points lower	5 to 9.9 percentage points lower
Gin Gin (Kolan)	Mareeba	Wondai
Stanthorpe	Cloncurry	Monto
Springsure (Bauhinia)	Millmerran	
Biggenden	Murgon	
Julia Creek (McKinlay)		
Alpha (Jericho)		
Kilkivan		
Charters Towers (Dalrymple)		
Nanango		

Source: ABS 2001 unpublished data

4.7 Other Systematic Influences: Urban Redundancy and Tourist/Travel Routes, and Destinations

Two further questions were presented at the beginning of this chapter. The first of these is the question of accelerated redundancy and decline for smaller centres located in close proximity to a larger centre. Given the prevalence of population decline in almost all small centres, as described in Section 4.4, and also the paucity of smaller towns in close proximity to a larger centre in the Agricultural and Pastoral Zones, any quantitative analysis seeking to elicit a differential trend by distance from a larger centre is not readily designed and calibrated. However, it is worth recording that almost all towns experiencing a decline of 30 percent or more may have been rendered redundant by their proximity to a much larger centre. This is clearly the case for Yuleba and Wallumbilla (49 and 29 kilometres from Roma), Yelarbon (50 kilometres from Goondiwindi), Wallangarra (18 kilometres from Tenterfield) and Aramac (67 kilometres from Barcaldine), but less clearly so for the two remaining towns experiencing severe decline, namely Texas and Baralaba.

The question of location on tourist/travel routes and destinations is equally difficult to address using quantitative methods. The independent variable, namely differentials in potential capacity to attract travellers and tourists, is not readily quantified, for the entire set of towns in the Agricultural and Pastoral Zones. That tourism and travel do have an increasingly important role in sustaining the economies of inland towns is evidenced by the experience of Longreach, Winton and Barcaldine. The internal multiplier effects of the tourism and travel sectors could be analysed in more detail using economic techniques but such analysis extends beyond the scope of the current inquiry.

4.8 Conclusion

The evidence assembled here provides little firm foundation for systematically forecasting the likely future pattern of population change in the inland. While the Agricultural and Pastoral Zones in aggregate have registered sustained decline in population, the picture at the local level within these zones is much more variable, with trends showing considerable volatility from one period to the next. This is especially pronounced in the Agricultural Zone, and less prominent in the Pastoral Zone. Despite this, some consistent tendencies do emerge from the analysis: in general, it is the centres with small populations and those reliant on traditional rural industries that have proven most at risk to population decline. Larger centres with a diversified industry structure, those adjacent to a specific economic investment, and those able to draw on a broader regional hinterland, have been more resilient. Another significant finding is the strong association between population change in the towns and in their associated rural areas. Areas registering urban growth have generally also recorded rural

population increases and vice versa. Where the two settlement sectors are out of kilter, town growth has been driven by specific economic investments unconnected with adjacent rural population fortunes.

5 Migration

5.1 Introduction

Of the three components of demographic change: fertility, mortality, and migration; it is the latter that has the greatest impact on the population of small areas in Australia (Hugo 2001). In particular, the process of internal migration '...whereby Australian residents leave some areas and concentrate in others...(Hugo 2003, p. 198)' affects the absolute size, age and sex structure, and qualitative characteristics of both sending and receiving communities. In small communities, net losses from migration can accelerate the process of social and economic decline which in turn, can further increase the rate of out-migration.

Research on internal migration processes in rural and remote Australia has had two main foci: the out-migration of the population from dryland farming and pastoral communities; and the migration from the capital cities to coastal regions and the well-watered parts of the south-eastern corner of Australia. While these processes have undoubtedly altered the settlement landscape of much of rural and regional Australia, they do not represent the sum of all migration occurring in these regions.

In this chapter the patterns, characteristics, and impacts of internal migration on the population of rural and remote Queensland are elucidated. Beginning with an outline of patterns of migratory flows between settlement zones described in Chapter Three of this report, the discussion then turns to an examination of mobility propensities by age and sex. The impact of migration on the composition of rural and remote populations is then examined through the analysis of net migration by occupation and employment status. Finally the phenomenon of 'sponge cities', whereby larger rural centres gain migrants from their rural hinterland, is explored.

5.2 Patterns of Migration

There is significant spatial variation in the rates of migration across inland Queensland. While many communities are suffering from the large net losses of migrants usually associated with rural decline, some localities are experiencing net gains in migration. Figure 5.1 shows net migration rates for the period 1996 to 2001 for Queensland Local Government Areas. Immediately apparent is the spatial heterogeneity in net migration rates, particularly within Agricultural Zone, where LGAs experiencing net migration gains are spatially contiguous with LGAs with net losses. For example, the net migration rate of Chinchilla (S) in Southern Queensland for 1996 to 2001 was 1.3 percent. Three adjacent shires: Murilla (S), Mundubbera (S) and Taroom (S), registered net migration rates over the same period of -7.2, -7.0 and -10.5 percent respectively. This variation in net migration rates within small geographical areas demonstrates the complexity of migration processes in Queensland; as evidenced in the discussion of regional 'hotspots' in the Agricultural and Coastal Zones in Chapter Three.

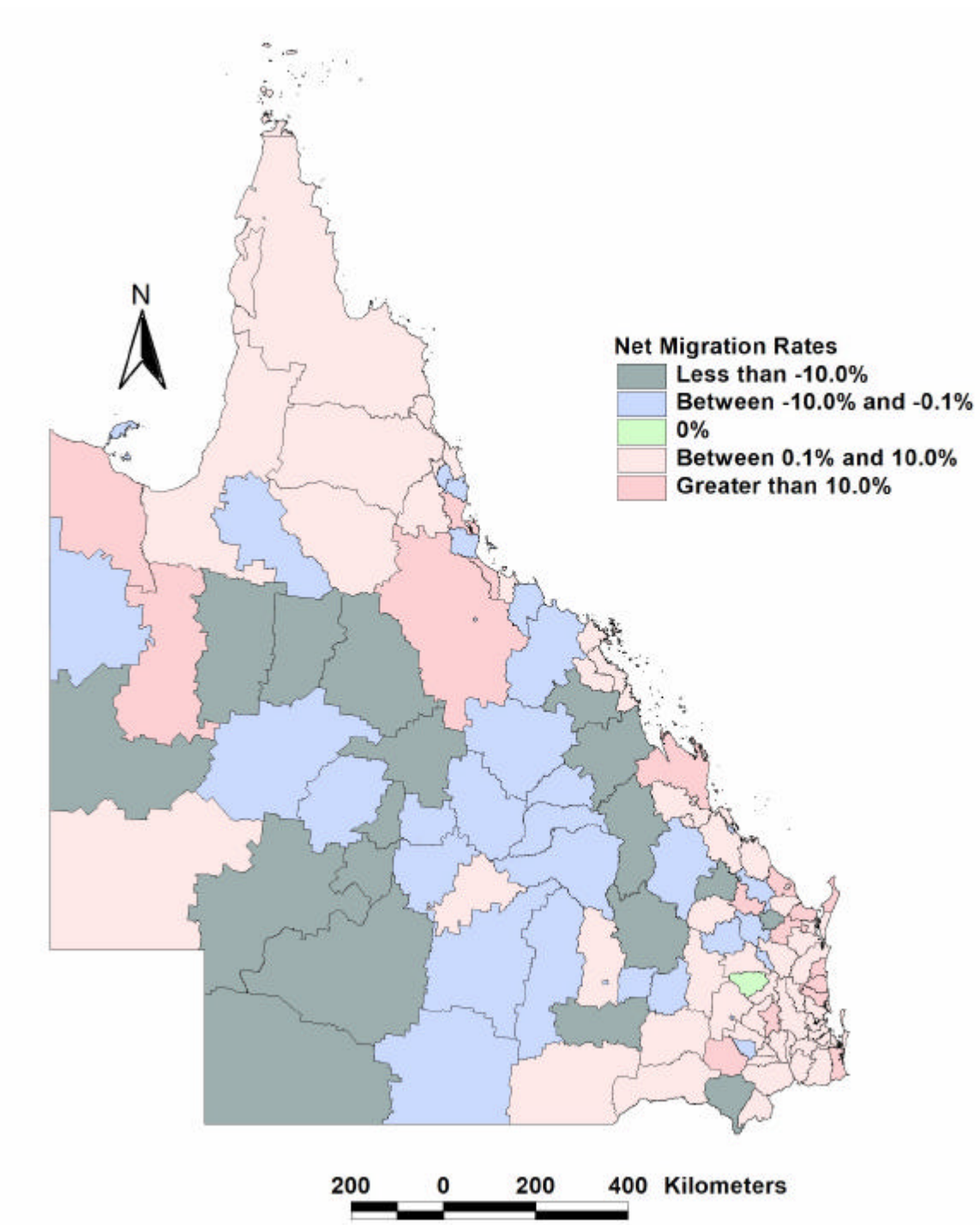


Figure 5.1: Net Migration Rates, LGAs Queensland:1996-2001
Source: ABS Census 2001 (unpublished data)

Notwithstanding the areal differentials in migration rates across Queensland Local Government Areas, there is evidence to suggest that broader regional processes are affecting the migration patterns within Queensland, and as such it is useful to examine migration at a coarser spatial scale. Figure 5.2 shows net migration rates for settlement zones for the period between 1996 and 2001.

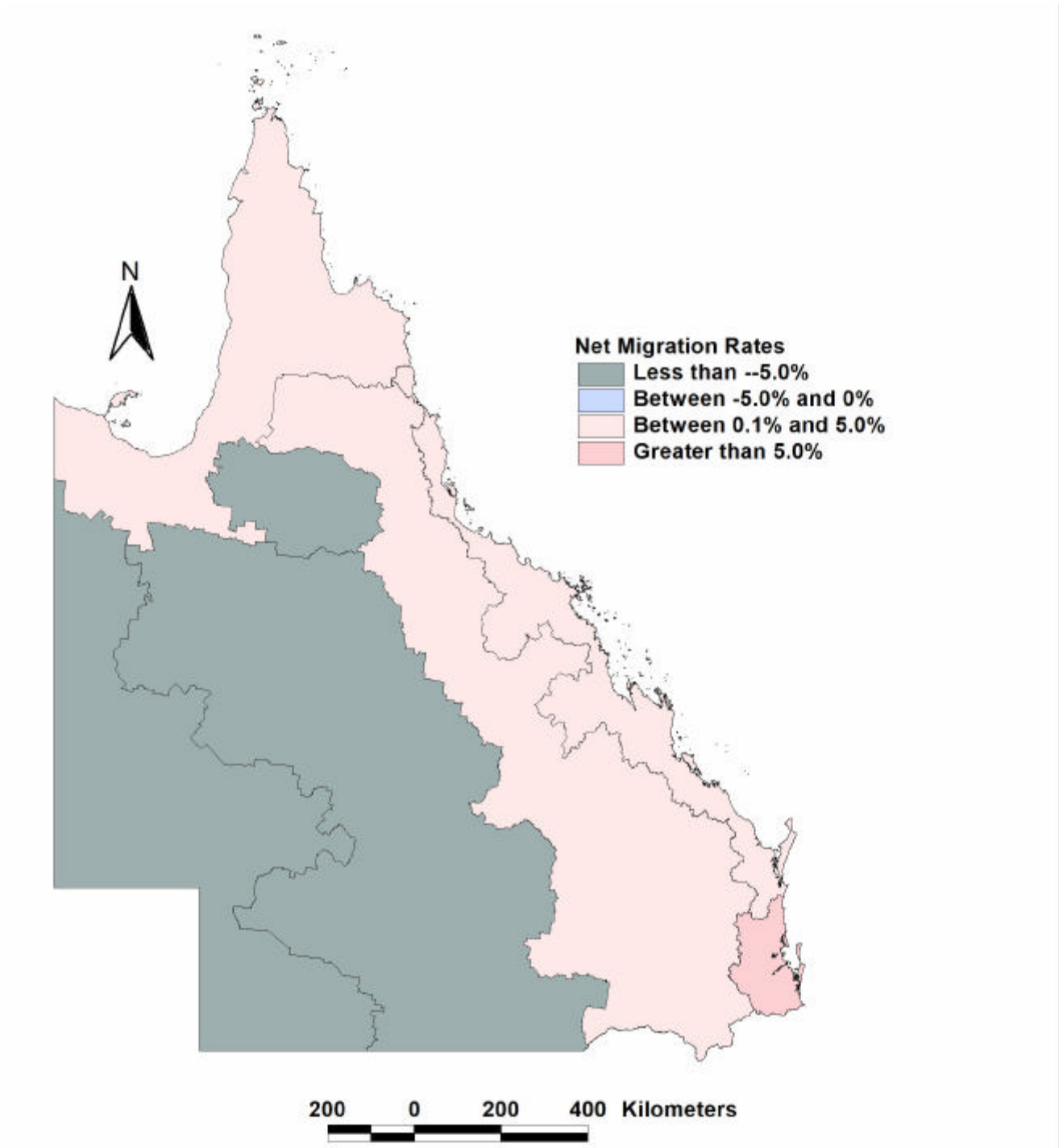


Figure 5.2: Net Migration Rates, Settlement Zones, Queensland: 1996-2001
Source: ABS Census 2001 (unpublished data)

Of the six settlement zones delineated in Chapter Three of this report, only Pastoral Queensland and the Remote Interior experienced net losses from migration. While the net gains from migration in Southeast and Coastal Queensland accord with the literature on contemporary patterns of migration within Australia (Barker, Ward & Moore 1998), the net gains in Agricultural and Remote Northern Queensland were less expected, and underline the variation in migration trends across the State. However, as revealed in Chapter Three of this report, the last intercensal period, 1996-2001, was unusual in that it saw lower than expected growth in the Coastal Zone, and higher than expected growth in the Pastoral Zone. Closer scrutiny of the data reveals that the net gains experienced in the Coastal, Agricultural and

Remote Northern Zones are attributable principally to inter-, as opposed to intrastate migration.

Table 5.1 sets out details of net migration flows between Queensland settlement zones for the period 1996 to 2001. A key feature of intrastate migration in Queensland over this period was the net redistribution of population to the southeast corner of the State, with all other zones experiencing net losses of intrastate migrants. While this is the dominant trend, also evident is a general eastward shift in the distribution of Queensland's population, with the Coastal Zone, and, to a lesser extent, the Agricultural Zone gaining migrants from further inland.

Table 5.1: Net Inter-Zonal Migration Flows, Queensland, 1996-2001

Source of net gain/loss	Southeast Queensland	Coastal Queensland	Agricultural Queensland	Pastoral Queensland	Remote Interior	Remote Northern
Southeast Queensland	0	-21,669	-8,127	-1,398	-1,067	-233
Coastal Queensland	21,669	0	-7,033	-1,211	-1,855	-783
Agricultural Queensland	8,127	7,033	0	-1,312	-550	-144
Pastoral Queensland	1,398	1,211	1,312	0	-1	-36
Remote Interior	1,067	1,855	550	1	0	5
Remote Northern	233	783	144	36	-5	0
Total gain/loss	32,494	-10,787	-13,154	-3,884	-3,478	-1,191
Total gain/loss (Rest of Australia)	205,990	36,855	5,042	-1,861	-2,233	623

Source: ABS Census 2001 (unpublished data)

Inter-regional migration to Coastal Queensland between 1996 and 2001 was dominated by flows from the Agricultural zone. While the net exchange equated to a gain of 7033 migrants by the Coastal zone, the absolute flows were significantly larger. This suggests strong functional linkages between the two regions. The second largest net gain of migrants to the Coast over this period was from the Remote Interior. This may be attributable to the increasing acceptance of Fly-in Fly-out arrangements within the mining industry, effectively replacing permanent residents with temporary workers. However, further evidence on the residential distribution of FIFO miners is required to verify this.

Agricultural Queensland gained migrants from Pastoral Queensland, the Remote Interior and Remote Northern Queensland. The largest net gain was from the Pastoral Zone; however, as was the case for the Agricultural–Coastal migration stream, there was a significant counter stream. More effective in redistributing the population to the Agricultural Zone were the flows between the Agricultural Zone and the Remote Interior.

Similarly redistribution of the population between Pastoral Queensland, the Remote Interior and Remote Northern Queensland was negligible with the largest stream being between Pastoral Queensland and the Remote Interior. The net redistributive effect of migration between the Pastoral zone and the Remote Interior only equated to one person over the five year period

5.3 Movement Propensity

Migration is highly selective by age, sex and other socioeconomic characteristics and consequently can have a substantial impact on the population composition of local areas (Hugo 2002). The analysis of movement propensity by age and sex is important as it not only provides an indication of the demographic future of a region, but also provides some indication of local determinants of mobility.

5.3.1 Age

Figure 5.3 shows the age profile of net migration for Agricultural, Pastoral, Remote Interior, and Remote Northern Queensland over the period 1996 to 2001. The age profile for net migration for Agricultural Queensland is strikingly different from those of the other three regions in both its magnitude and shape. The implication is the presence of significant differentials in migration determinants for the Agricultural Zone and other parts of inland Queensland.

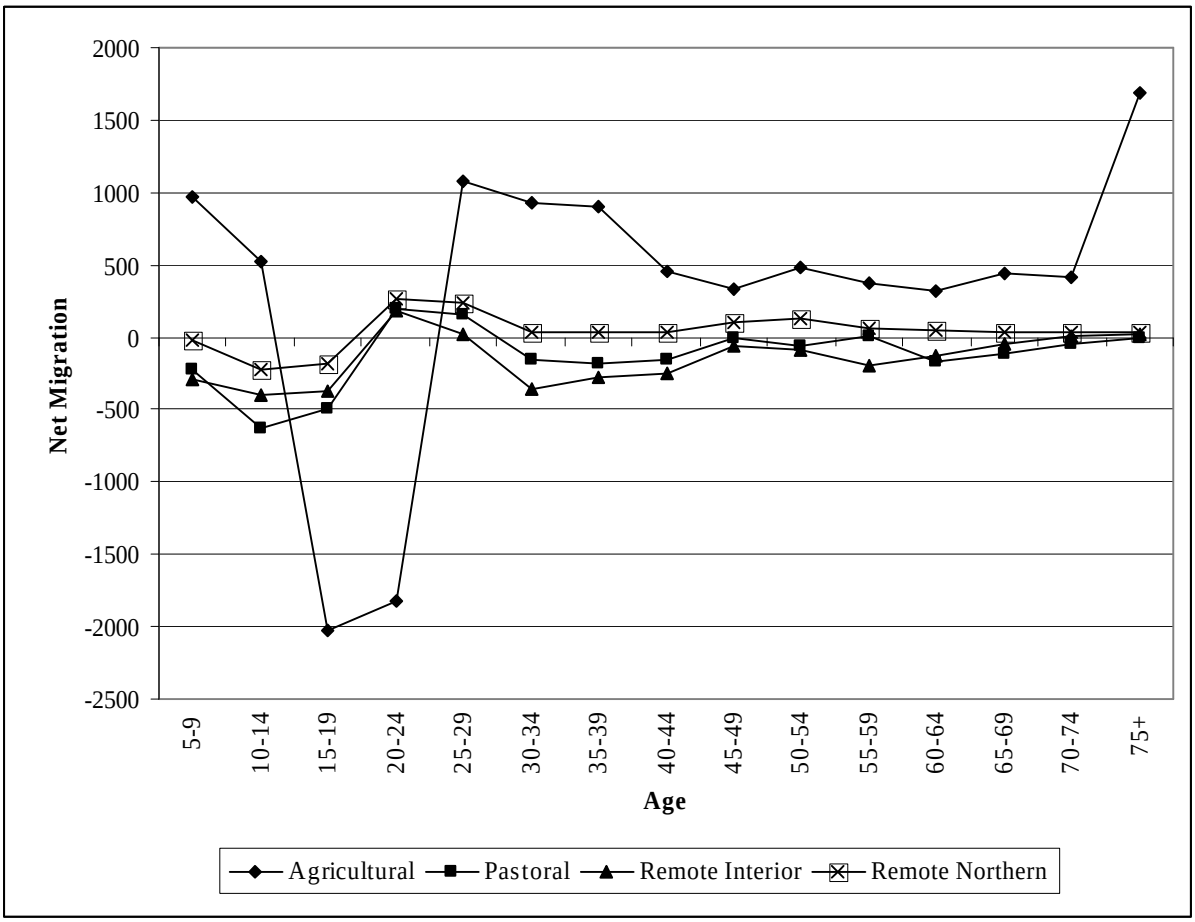


Figure 5.3: Age Profile of Net Migration for Agricultural, Pastoral, Remote Interior and Remote Northern Queensland: 1996-2001
Source: ABS 2001 unpublished data

One of the major demographic issues which emerges from the popular and academic literature on rural and remote Australia is the out-migration of young people (defined here as persons aged 15-24) for education and employment opportunities (Alston 2004; Gabriel 2002). Figure 5.3 reveals that migration from inland Queensland is selective of young adults with all settlement zones experiencing a net loss of 15-19 year olds. In absolute terms, Agricultural Queensland experienced the greatest loss in this age group (2031 people) although, in relative terms, the proportional loss of 15-19 year olds was the smallest of all settlement zones (-0.5%). The Remote Interior Zone had the highest age specific net migration rate, -24.2 percent, for this age group; however, owing to the small population of the region this only equated to a net loss of 370 people.

In contrast to the uniform net loss of 15 to 19 year olds across inland Queensland, only Agricultural Queensland experienced a net loss of young adults aged 20 to 24. Previous studies of internal migration from non-metropolitan to metropolitan regions of Australia have found that migration from non-metropolitan regions is highly selective of the 20 to 24 age

group. This has been attributed to lack of educational and meaningful employment opportunities in inland regions (Alston 2004). The net gains in this cohort by the Pastoral, Remote Interior and Remote Northern settlement zones, albeit small, contradict this trend, and indicate that other processes are operating in these regions. As discussed in Chapter Three of this report, the labour force requirements of the mining and pastoral industries are slanted toward young single men, in particular large pastoral stations which dominate the settlement landscape of the Remote Interior Zone have a truncated demography comprising young, single workers, recruited from outside their immediate region. Another component of this migration is migration of young people who have completed secondary education at boarding school in regional centres returning to their parental home.

Since the late 1960s it has been '...recognised that a there ... (is)... a return flow of former urban-rural migrans who have completed education in the city' (Hugo 2002). According to Hugo (2002) this stream is supplemented by young families and career spiralists for whom a sojourn in rural areas represents a necessary part of their career trajectory. This flow is evident in the age profile of net migration for the Agricultural Zone which peaks sharply among the 25 to 29 cohort. The other inland zones do not display such a marked peak at this age group; however, modest gains are experienced in the Pastoral Zone and the Remote Interior.

The age profiles of net migration for Pastoral zone, and to a lesser extent, the Remote Interior, vary in an important respect from the Agricultural zone in the net loss of adults aged in their 30s and 40s. This may be due to the increase in the adoption of FIFO arrangements in remote mining communities, or a consequence of service withdrawal from these regions.

Agricultural Queensland is the only settlement zone to experience a marked gain in migrants of retirement age. An important component of this migration is likely to be amenity driven, particularly in areas such as the eastern Darling Downs with high levels of accessibility to major regional centres and lower living costs than traditional coastal retirement centres (Green 2005). However, a study of migrants to inland communities in Northern New South Wales conducted in the early 1990s found that migration of the elderly to rural areas had a number of unique characteristics differentiating it from retirement migration to the coast, including the desire to be closer to surviving family members (Drysdale 1991).

5.3.2 Sex

Research on rural-urban migration in Australia has found migration from rural areas to be highly selective of sex as well as age. A recent study conducted by Alston (2004) in rural New South Wales found that young women were leaving inland communities at a significantly higher rate than young men. A major concern arising from this sex selectivity is the resultant sex imbalance and subsequent difficulties in partner and family formation for the men choosing to remain in these communities. The longer term consequences of this sex imbalance may include declining rates of natural increase for inland communities as rates of partnership formation decline.

The sex selectivity of migration varies across inland Queensland. As is the case in other closely settled parts of rural Australia, Agricultural Queensland experienced a significantly larger net loss of young women than men. Over the period from 1996 to 2001, the Agricultural Zone lost 100 females aged 15-19 for every 71 males lost in this age group, while for the 20 to 24 cohort, there was a net loss of 100 females for every 54 males. This rural exodus of young women did not occur uniformly across inland Queensland. To the contrary, Pastoral Queensland lost slightly more males than females in the 15 to 19 year age group,

whilst the sex differential in net migration for the Remote Interior was negligible across all age groups. For the Remote Interior, a sex differential in the net migration did exist but amongst the younger cohorts aged between 10 to 14 and 15 to 19 in 2001.

The other example of sex selective migration worthy of note is the influx of young males, aged between 25 and 34, to Pastoral Queensland. The sharp peak in net migration for males in these age groups is attributable to employment opportunities in the pastoral and mining industries, as well as return migration upon completion of educational programs in larger urban areas. What differentiates this stream from that seen amongst these cohorts in the Agricultural Zone is the absence of a corresponding net gain in female migrants.

5.3.3 Occupation

> *"...we're losing some good families out of town and gaining some pretty ordinary ones..." (Monto Resident quoted in Herbert-Cheshire & Lawrence 2003, p. 19)*

The impact of migration on the population of small areas is not just limited to the quantitative change in the age/sex structure or to the rates of growth or decline of a community. Of equal importance is the impact of migration on the human capital of a region. The withdrawal of private and public services associated with declining regions exacerbates the cumulative decline of many centres by driving many of the skilled members of the local workforce to larger regional centres in search of employment. The net result is a qualitative shift in the population of many regions as the level of human capital declines (Herbert-Cheshire & Lawrence 2003). In some instances this qualitative shift is exacerbated by welfare led migration to some regions, whereby low income, often welfare dependent, groups migrate to rural areas attracted by the lower costs of living (Hugo & Bell 1998). This shift in the population composition of many rural and remote areas has potential to exacerbate their decline.

The decline in human capital caused by selective migration is difficult to measure as Census data only capture the current occupation of movers; not their occupation at the time of migration (Bell et al. 1995). Given the links between geographic and labour mobility this lack of data on the occupation at the time of move introduces a degree of error into the analysis. Nevertheless, analysis of these data provide some indication of flows of human capital between regions. For this analysis data were only available at the Statistical Division level for transitions between 1991-1996. While these data are somewhat dated, they do provide an insight into the impacts of the wave of economic restructuring and deregulation which occurred throughout the early 1990s on the human capital of regional Queensland.

Table 5.2 details the demographic effectiveness of migration by occupation between 1991 and 1996 for Queensland Statistical Divisions. Demographic effectiveness is a measure of the '...percentage of turnover that results in population change' (Plane and Rogerson 1994, p 9) for a given region. The measure has logical limits from +100 to -100, which are reached when movement to or from a region is unidirectional. The measure has been generated here to indicate the imbalance between inwards and outwards flows.

The occupational classification used has been generated by aggregating categories from the Australian Standard Classification of Occupations as follows:

1. *Managers, Professionals and Associate Professionals*: ASCO Managers and Administrators, Professionals, and Associate Professionals;

2. *Clerical and Service Workers*: Advanced Clerical and Service Workers, Intermediate Clerical, Sales and Service Workers, and Elementary Clerical, Sales and Service Workers;
3. *Tradespeople*: Tradespersons and Related Workers;
4. *Production Workers*: Intermediate Production and Transport Workers;
5. *Labourers*: Labourers and Related Worker

Table 5.2 Demographic Effectiveness for Occupationl Groups, Queensland Statistical Divisions:1991-1996

Statistical Division	Managers, Professionals and Associate Professional	Clerical and Service Workers	Tradespeople	Production Workers	Labourers	Unemployed
Brisbane	10.7	3.2	2.3	2.7	2.3	4.8
Moreton	30.6	7.9	6.6	6.3	6.9	15.2
Wide Bay-Burnett	10.6	-2.2	-0.9	0.1	0.8	11.5
Darling Downs	-6.1	-3.3	-1.9	-3.0	-0.1	-1.5
South West	-5.1	-8.4	-7.3	-10.7	-5.9	-19.1
Fitzroy	-0.4	-1.2	-0.2	1.6	0.3	-1.5
Central West	-5.5	-11.0	-4.0	-6.2	-5.4	-13.2
Mackay	6.6	-1.6	2.5	2.9	1.7	-0.6
Northern	-6.3	-0.6	3.5	2.0	0.4	1.7
Far North	20.9	5.3	4.0	2.7	5.1	0.8
North West	-9.5	-7.8	-1.5	-3.8	-1.7	-25.3

Source: ABS, 1996 Census (unpublished data)

Table 5.2 details the demographic effectiveness of migration by occupational category for Queensland Statistical Divisions. Between 1991 and 1996. Demographic effectiveness for migration by occupational category for the two inland Statistical Divisions show that the greatest redistribution by occupational category for South West Queensland was of Production Workers, with a net loss of 11 workers per every hundred crossing the statistical division boundary, followed by Clerical and Service Workers (-8.4 percent). For Central West the largest net change in occupation was for Clerical and Service workers (-11.0 percent) followed by Production Workers (-6.2 percent). The North West Statistical Division experienced the greatest redistribution by occupational category of Managers, Professionals and Associate Professionals (-9.5 percent), again followed by Clerical and Service Workers (-7.8 percent).

A component of the negative redistribution of Clerical and Service workers from inland Queensland over this intercensal period may have resulted from the wave of bank branch closures which swept over rural Australia in the early 1990s. While no data exist for rural Queensland, a 1999 study of bank branch closures in rural South Australia found that between 1981 and 1998 rural and remote South Australia lost over a third of its bank branches (Argent & Rolley 1999). In addition, there is evidence to suggest that the corporatisation of government business enterprises such as Australia Post and Telstra in the mid-1990s impacted on the number of Clerical and Service jobs in many inland communities. Gerritsen (2000) estimated that the '...the replacement of a stand alone post office with a community mail agency typically resulted in the removal of at least three jobs from the community'.

The redistribution of Production Workers from inland Statistical Divisions; a category which includes Intermediate Production and Transport Workers, may have been the result of large scale job losses in the railway sector in the early 1990s. Between 1991 and 1993 an estimated 5000 full-time railway jobs were lost from non-metropolitan Queensland (Productivity Comission 1999). This also provides an explanation for the areal differentials in redistribution

of this occupational category across inland Queensland, with the North West having only limited railway infrastructure and services.

An explanation for the loss of Managers, Professionals and Associate Professionals from North West Queensland is more difficult to unearth. What is evident is the significant impact the exodus of this occupational class would have had on the human capital of this region.

5.3.4 Employment

Another dimension of the qualitative shift in population composition is the gain in unemployed residents by regions experiencing population decline. Welfare-led migration, whereby lower income groups move to regional areas attracted by lower living costs, has the potential to impact on the social and human capital of the receiving region. Data from the 1996 Census suggest that in-migration of the unemployed is not a significant concern for inland Queensland. Rather, the data show a significant redistribution of unemployed from inland Queensland to the Southeast and Coastal Statistical Divisions, with demographic effectiveness for the unemployed in North West, South West, and Central West Queensland equal to -25.3, -19.1 and -13.2 respectively. The Darling Downs, a closely settled Agriculture region, also lost unemployed residents (-1.5), though at a greatly reduced rate. Positive redistribution of unemployed residents was greatest for the Moreton (15.2) and Wide Bay-Burnett (11.5) regions suggesting that welfare-led migration is a spatially constrained phenomenon, generally limited to near-coastal locations. These data demonstrate the importance of employment in driving mobility in inland Queensland. This has implications for retirement and career cycle employment in these regions, as it suggests that availability of work may be the pre-eminent factor in mobility decisions.

5.4 The 'Sponge City'

> *Do regional cities grow at the expense of the surrounding rural areas and smaller towns, by drawing their migrants from the regions around them in a process of localised population concentration, or do they draw migrants from a much wider area, including the capital cities, in a process of inter-regional population redistribution? (Beer, Bolam & Maude 1994, pp. 45-6).*

The proceeding discussion on the patterns of migration within regional Queensland was based on a coarse spatial resolution concentrating on flows between settlement zones and between Statistical Divisions. While analysis at this spatial scale allows the broad patterns of inter-regional migration to be examined, it masks local variations. As discussed in Chapter Three of this report, there is significant heterogeneity in the pattern of growth and decline throughout remote and regional Australia. In particular, the growth of larger provincial towns and cities over the past two decades, stands in stark relief to the idea that remote and regional Australia is characterised by uniform population decline. A number of recent studies into the population dynamics of rural Australia have posited that an important component of this heterogeneity is the migration of the population from small rural towns to larger provincial centres. This is also consistent with the findings presented in Chapter Four of this report which showed that in some areas rural decline occurred adjacent to urban growth, or small town decline with regional growth.

While the continued growth of provincial towns and cities over the past two decades (see Chapter Three) provides preliminary evidence as to the 'sponge city' phenomenon, direct evidence, by way of migration flows is more elusive. This is a product of the availability of migration data only down to Statistical Local Areas, which do not generally concord with urban areas. It is therefore not possible to directly measure the rate of in-migration to regional

centres from the rural hinterland for all Queensland towns or cities. There are, however, a small number of instances where the Statistical Local Area boundaries are coincident (or almost coincident) with the UCL boundary. These are: Toowoomba, Dalby, Charters Towers, Roma and Goondiwindi.

Table 5.3 shows the population and percentage population change for provincial centres located in the Agricultural Zone, 1971-2001. No towns in the Pastoral Zone or Remote Northern Zone are included in this analysis as none had a significantly large population in 2001. Mt Isa, located in the Remote Interior Zone, has been excluded due to its specialised role as a mining centre.

Table 5.3: Population Size and Change for Provincial Centres (>5000), Agricultural Zone, Queensland: 1971-2001

	1971	1976	1981	1986	1991	1996	2001	1971-2001	1991-2001
Toowoomba	57,578	63,956	63,401	71,362	75,990	83,350	89,338	55.2%	17.6%
Warwick	9,303	9,169	8,853	9,435	10,393	10,947	12,011	29.1%	15.6%
Dalby	8,879	8,997	8,784	8,338	9,385	9,517	9,731	9.6%	3.7%
Charters Towers	7,518	7,914	6,823	7,208	9,016	8,893	8,492	13.0%	-5.8%
Kingaroy	4,925	5,088	5,134	6,362	6,672	7,013	7,193	46.1%	7.8%
Mareeba	5,160	5,776	6,309	6,614	6,795	6,874	6,900	33.7%	1.5%
Roma	5,870	5,898	5,706	6,069	5,669	5,744	5,907	0.6%	4.2%
Biloela	4,034	4,586	4,643	6,174	5,051	5,161	5,485	36.0%	8.6%
Goondiwindi	3,695	3,741	3,576	4,103	4,331	4,374	5,491	48.6%	26.8%

Source: ABS Census 2001 (unpublished data)

Of the five towns for which some migration data are available only two, Toowoomba and Goondiwindi, experienced any significant population growth over the thirty year interval 1971-2001. The modest growth in the populations of Dalby, Roma and Charters Towers over this period is the result of natural increase rather than any significant inmigration to the towns. Nevertheless, these towns may still have gained migrants from their rural hinterlands only to subsequently lose migrants to other regional centres.

Table 5.4 details the origins of the five largest net migration gains and the destinations of the five largest net migration losses, for the five towns listed above, for the period 1996-2001. Initial scrutiny of the data shows that all five urban centres gained migrants from Local Government Areas located further inland. Given that the distribution of urban centres in Queensland is concentrated in the coastal and sub-coastal zone, this is a reasonable, though imperfect, approximation of the rural hinterland of many of these towns. There is also evidence of significant migration flows from smaller urban centres to larger towns in the Agricultural Zone. Specifically notable is the case of Toowoomba, which had large net gains of migrants from Dalby (T) (233), Roma (T) (217), and Goondiwindi (T) (82). Net migration gains from smaller centres by towns further up the urban hierarchy are also illustrated by the dominance of Brisbane as a destination for the southern Queensland towns of Toowoomba, Dalby, Roma and Goondiwindi, and of Townsville-Thuringowa, in the case of Charters Towers.

Table 5.4: Origin and Destinations of Five Largest Net Gains/Losses, Case Study Towns: 1996-2001

	Total Net Gain/Loss	Origin of Five Largest Net Gains		Destination of Five Largest Net Losses	
Toowoomba	5519	Rosalie (S)	255	Brisbane (C)	-1841
		Townsville (C)	242	Maroochy (S)	-524
		Dalby (T)	233	Gold Coast (C)	-331
		Roma (T)	217	Caloundra (C)	-265
		Warwick (S)	209	Cambooya (S)	-192
Dalby	-410	Millmerran (S)	28	Toowoomba (C)	-233
		Stanthorpe (S)	22	Brisbane (C)	-211
		Emerald (S)	18	Wambo (S)	-162
		Tara (S)	17	Maroochy (S)	-71
		Mundubbera (S)	15	Caloundra (C)	-48
Charters Towers	-202	Mount Isa (C)	91	Townsville (C)	-212
		Mareeba (S)	37	Thuringowa (C)	-200
		McKinlay (S)	34	Dalrymple (S)	-152
		Flinders (S)	29	Brisbane (C)	-37
		Richmond (S)	28	Livingstone (S)	-33
Roma	-473	Bendemere (S)	43	Toowoomba (C)	-217
		Paroo (S)	37	Brisbane (C)	-205
		Jericho (S)	21	Bungil (S)	-128
		Blackall (S)	18	Hervey Bay (C)	-29
		Johnstone (S)	18	Warwick (S)	-24
Goondiwindi	74	Booringa (S)	24	Waggamba (S)	-143
		Mackay (C)	24	Toowoomba (C)	-82
		Balonne (S)	19	Warwick (C)	-36
		Roma (T)	16	Brisbane (C)	-33
		Chinchilla (S)	15	Hervey Bay (C)	-30

Source: ABS Census 2001 (unpublished data)

All five towns experienced a significant net loss of migrants to the immediately surrounding Local Government Areas (Toowoomba (C), Cambooya (S); Dalby (T), Wambo (S); Charters Towers (T, Dalrymple (S); Roma (T), Bungil (S); Goondiwindi (T), Waggamba (S)). This is likely a statistical artifact caused by urban overspill into these Local Government Areas. Also notable is that all five urban centres lost migrants to coastal Local Government Areas indicating that discretionary, probably retirement-related migration is a significant contributor to net losses in these towns.

The analysis presented above suggests that the 'sponge city' phenomenon does exist to a limited extent within Agricultural Queensland, and is most evident for Toowoomba. However, initial scrutiny of the data also suggests that the numbers involved are too small to assert that this represents a widespread or numerically significant phenomenon.

5.5 Conclusion

Migration within Queensland demonstrates marked spatial heterogeneity in magnitude and selectivity by age, sex and other socioeconomic characteristics. Despite the variability of migration over sometimes small areas it is possible to identify a number of distinct migration processes operating across Queensland regions. Perhaps most significant is the distinction between discretionary migration to coastal and near-coastal zones and occupationally driven mobility that dominates inland Queensland. This distinction is important as it relates migration, and subsequent population growth, in inland Queensland, to the economic vibrancy and sustainability of the region; in layman's terms; no jobs, no people. This stands in stark contrast to the Coastal Zone where migration appears to be driven more by lifestyle preference than real (or perceived) job opportunities.

6 Ageing

6.1 Introduction

'Among the more profound features of population ageing is its regionality' (Jackson & Felmingham 2002).

An important consequence of the divergent demographic trends affecting Queensland's settlement zones is the spatial heterogeneity in population ageing across the State. This has implications for both the provision of services and for the sustainability of ageing communities. This chapter begins with an examination of the rates of population ageing for Queensland settlement zones over the decade, 1991 to 2001. Areal differentials in population ageing are then examined at the Local Government Area scale and a case study of two inland towns is presented. In conclusion the impacts of population ageing in inland communities are explored.

6.2 Population Ageing: Queensland Settlement Zones

Table 6.1 details the absolute and relative change in the population aged 65 and over, and the median age of Queensland settlement zones between 1991 and 2001. The data reveal marked differentials in age structure across Queensland settlement zones. In 2001, median age ranged from 27.1 years in the Remote Northern Zone, to 35.2 in the Southeast while the proportion of the population aged 65 and over varied from a low of 4.8% in the Remote Northern Zone to a high of 11.9% in the Southeast and Agricultural Zones. The population of inland Queensland tends to be younger than the population of coastal Queensland; a reflection of the historical divergence in the economic and demographic circumstances of these regions, discussed in Chapter Two of this report.

Over the decade, 1991 to 2001, the rate of population ageing (measured by the percentage point change of proportion of population aged 65 and over) varied significantly across settlement zones; a product of the regional differentials in migration age schedules discussed in Chapter Five. For Queensland, the percentage point change in the proportion of the population aged 65 and over was significantly lower than for Australia as a whole (+0.8 compared with +1.3). This is attributable to Queensland's large net gains in interstate migrants over this period. Within Queensland, the mitigating effect of migration on the rate of population ageing was most striking in the Southeast, with a percentage point change in the elderly population of only +0.4. All other settlement zones, save only the Remote Northern (+1.0), had percentage point changes in the proportion of elderly exceeding the national rate. The largest was the +2.2 percentage point increase experienced by the Remote Interior over this period.

The high rates of population ageing in the Remote Interior and Pastoral zones over this period were primarily a result of net losses of younger age groups. For the Coastal and Agricultural Zones, losses at younger ages were accompanied by significant retirement migration, significantly altering the age structure of these zones. Despite this, they have very young population profiles due largely to out migration of older residents and consistent turnover of young adults in primary sector jobs.

Table 6.1: Population Ageing, Settlement Zones, Queensland: 1991-2001

	1991			2001			1991-2001	
	65+	% 65+	Median Age	65+	% 65+	Median Age	% Point Change 65+	Change in Median Age
Southeast	212285	11.5	32.5	281513	11.9	35.2	0.4	2.7
Coastal	68018	9.9	31.3	92052	11.4	35.0	1.4	3.7
Agricultural	34692	10.2	30.8	42535	11.9	34.9	1.7	4.1
Pastoral	3194	8.2	29.4	3587	9.9	33.1	1.7	3.7
Remote Interior	871	3.1	26.8	1288	5.3	30.0	2.2	3.2
Remote Northern	837	3.8	25.1	1257	4.8	27.1	1.0	1.9
Queensland	319897	10.8	31.9	422232	11.6	35.0	0.8	3.1
Australia	1950715	11.3	32.4	2435534	12.5	35.6	1.3	3.2

Source: ABS 2001

An emerging trend identified in the literature on population ageing in non-metropolitan Australia is the increased retention of elderly residents in many inland communities, who previously would have migrated to coastal or urban areas upon retirement. Tonts (2000) in his study of rural communities identified four factors contributing to this phenomenon:

1. Rising real estate values in coastal and metropolitan regions.
2. Negative images of urban life (crime, violence, congestion).
3. The need to remain close to family farming operations to reduce labour costs and allow family members to seek off farm employment.
4. Reluctance to lose touch with networks of family and friends.

Whilst the authors are not aware of any studies on the retention rates of elderly residents in the towns of inland Queensland, similar processes are assumed to be operating.

Despite the higher rates of population ageing throughout non-metropolitan Queensland (excluding the Remote Northern Zone) the median age of the population of these zones is still lower than Southeast Queensland. Therefore, while much of inland Queensland is ageing at a faster rate than the Southeast corner, the younger age structure of the inland will ameliorate the impacts of population ageing in the short to medium term.

6.3 Population Age Structure; Local Government Areas, 2001

Analysis of population aging at the zonal scale masks the significant heterogeneity in population age structure that exists at the Local Government Area. Figure 6.1 shows the proportion of the population aged 65 and over for Queensland Local Government Areas.

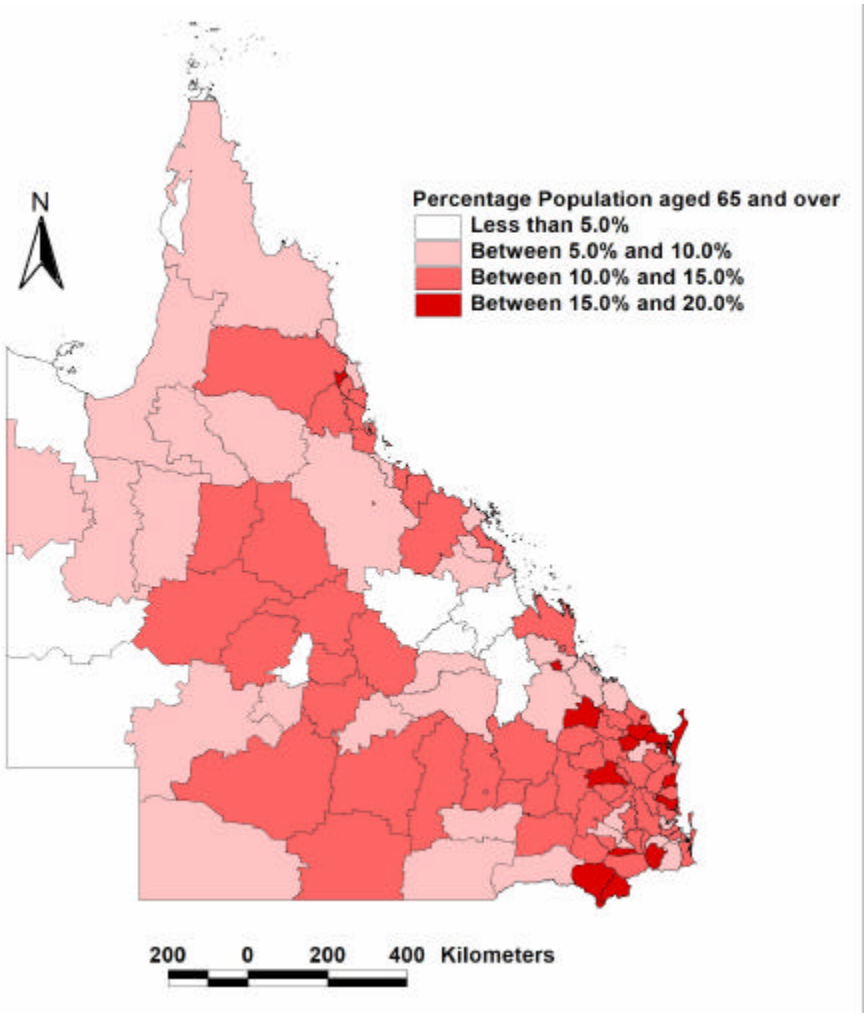


Figure 6.1: Proportion of Population Aged 65 and Over, Local Government Areas, 2001
Source: ABS unpublished data

Immediately apparent from the data is the concentration of elderly populations in the Southeast corner of the State extending northward to the Wide-Bay/Burnett Region. Further clustering of elderly populations is evident in the Rockhampton/Yeppoon district and across coastal Local Government Areas stretching, albeit with some interruptions, from Mackay to Cairns. Whilst the older age profile of the coastal and sub-coastal zone accords with the analysis at the settlement zone scale, the younger age structure of some coastal Local Government Areas suggest that other localised demographic processes are influencing the population composition of the region.

The most notable deviation from the broader population age structure of the coastal and near coastal region are the very young population age structures of Local Government Areas situated in the Bowen Basin (Broadsound, 3.3%; Belyando, 4.8%; and Peak Downs, 3.6%). The younger age structure of this sub-region is attributable to high levels of work-related migration, associated with employment in the mining sector, which distorts the age structure of the region across the key labour force years.

Zonal differentials in population age structure are significantly more distinct in inland Local Government Areas than in coastal or sub-coastal Queensland, with less heterogeneity in population age structure at the Local Government Area level. The younger age structures of the Remote Interior and Remote Northern Zones contrast with the older age structures of Local Government Areas in the Pastoral Zone. The similarities in migration age schedules for

these zones (Figure 5.3, page 63) suggest that the older age structure of much of the Pastoral Zone is due to retention of elderly residents. Similar greying of the population in dry-land farming communities has been seen across much of rural Australia.

A clearer understanding of the impact of migration selectivity on population age structure can be gained by examining the top and bottom quintile of Local Government Areas by proportion of estimated resident population aged 65 and over in 2001. Within the upper quintile a number of classes can be identified:

- High-amenity Coastal; these LGAs are distinguished by high levels of amenity driven migration (e.g. Hervey Bay, Redcliffe, Caloundra, Isis, Noosa, Hinchinbrook, Maroochy, Cooloola);

- High-amenity Rural; these LGAs are characterised by out-migration of younger age groups, and emerging amenity-driven migration of people approaching, or at retirement age (e.g. Atherton, Boonah, Stanthorpe, Wondai, Clifton, Kilcoy, Perry, Warwick, Toowoomba)

- Declining Rural; characterised by a declining population, the ageing of these Local Government Areas is attributable to the loss of younger age groups and the increased rates of retention of elderly residents (e.g. Mount Morgan, Inglewood, Monto, Biggenden, Murilla)

Table 6.2: LGAs in the Upper and Lower Quintile of Proportion of Population Aged 65 and Over, 2001

Upper Quintile		Lower Quintile	
LGA	% aged 65 +	LGA	% aged 65 +
Hervey Bay	19.5	Aurukun	2.7
Mount Morgan	19.2	Duaringa	2.9
Redcliffe	18.9	Mornington	3.0
Monto	18.6	Broadsound	3.3
Caloundra	18.2	Burke	3.4
Biggenden	18.2	Diamantina	3.4
Maryborough	17.2	Ilfracombe	3.6
Atherton	17.1	Peak Downs	3.6
Bundaberg	16.7	Boulia	4.2
Boonah	16.5	Torres	4.6
Inglewood	16.5	Belyando	4.8
Stanthorpe	15.5	Mount Isa	5.2
Wondai	15.1	Thuringowa	5.3
Clifton	15.1	Carpentaria	5.5
Isis	15.0	Cook	5.5
Noosa	15.0	Cloncurry	5.5
Hinchinbrook	14.9	Barcoo	5.6
Murilla	14.9	Emerald	5.6
Maroochy	14.5	Nebo	5.9
Kilcoy	14.5	Logan	5.9
Perry	14.5	Croydon	6.3
Warwick	14.5	Bulloo	6.3
Chinchilla	14.2	Pine Rivers	6.3
Toowoomba	14.2	Cambooya	7.1
Cooloola	14.2	Balonne	7.3

Source: ABS 2001 unpublished data

Similarly, amongst the lower quintile of Local Government Areas, a number of categories can be identified:

- Remote Indigenous; large indigenous communities within these LGAs produce a distorted age structure owing to higher levels of fertility and mortality than those of the wider Australian community (Aurukun, Mornington, Burke, Torres, Carpentaria , Cook);

- Remote Mining/Pastoral and Bowen Basin; characterised by employment driven migration, distorting the age structure of the LGA by increasing the population at working ages (Burke, Diamantina, Boulia, Ilfracombe, Mt Isa, Cloncurry, Barcoo, Emerald, Croydon, Bulloo, Balonne)

- Peri-Urban; the youthful age-structure of these LGAs is attributable to the residential migration of young families to lower-cost housing in the urban fringe (Logan, Pine Rivers, Thuringowa, Cambooya).

6.4 Rates of Ageing 1991-2001: Local Government Areas

During the decade 1991-2001, the proportion of the population aged 65 and over increased by 0.8 percentage points in Queensland and 1.3 percentage points in Australia. As shown in Table 6.1, the rates of population ageing across Queensland settlement zones varied significantly around these figures. Similarly, the rate of population ageing, as measured by percentage point change in the proportion of the population aged 65 and over varied significantly across Local Government Areas, from +5.7 percentage points in Monto Shire to -3.7 percentage points in Croydon. The top and bottom quintile in the percentage point change in the proportion of the population aged 65 and over, for Local Government Areas between 1991 and 2001, are shown in Table 6.3.

Initial scrutiny of the data reveal that the Local Government Areas ageing most rapidly over this period were not necessarily those shires with the largest proportion of population aged 65 and over in 2001 (Table 6.3). To the contrary, a number of the most rapidly ageing Local Government Areas over this period remain young in comparison with the state and national average. Furthermore, a number of shires within the top quintile of Local Government Areas in terms of proportion of population aged 65 and over in 2001, were located in the bottom quintile of percentage point change in proportion of population aged 65 and over during this period (Warwick, Mount Morgan). This illustrates the complex interaction between the age structure of a locality, and its historical and contemporary migration regimes. Furthermore, it demonstrates how short-term trends can significantly alter the age structure of an area (Monto) or act to stabilise a population's age structure (Mount Morgan).

Table 6.3: Upper and Lower Quintile, Percentage Point Change in Population Aged 65 and Over, 1991-2001

Upper Quintile		Lower Quintile	
LGA	% point change 91-01	LGA	% point change 91-01
Monto	5.7	Croydon	-3.7
Quilpie	4.5	Diamantina	-2.9
Inglewood	3.8	Ilfracombe	-2.8
Isis	3.7	Perry	-1.0
Bungil	3.3	Isisford	-0.9
Nanango	3.3	Boulia	-0.9
Murilla	3.2	Brisbane	-0.8
Nebo	3.1	Cloncurry	-0.8
Hinchinbrook	3.0	Tambo	-0.6
Bowen	2.8	Mornington	-0.5
Atherton	2.7	Aurukun	-0.4
Burnett	2.6	Gold Coast	-0.2
Etheridge	2.6	Millmerran	-0.2
Tiaro	2.5	Gayndah	0.0
Woocoo	2.5	Torres	0.1
Banana	2.4	Burke	0.2
Kilcoy	2.4	Murweh	0.3
Johnstone	2.3	Mount Morgan	0.3
Blackall	2.3	Warwick	0.4
Bulloo	2.3	Warroo	0.5
Hervey Bay	2.3	Crow's Nest	0.5
Bendemere	2.2	Charters Towers	0.5
Mareeba	2.2	Townsville	0.5
Livingstone	2.1	Balonne	0.5
Boonah	2.1	Carpentaria	0.5

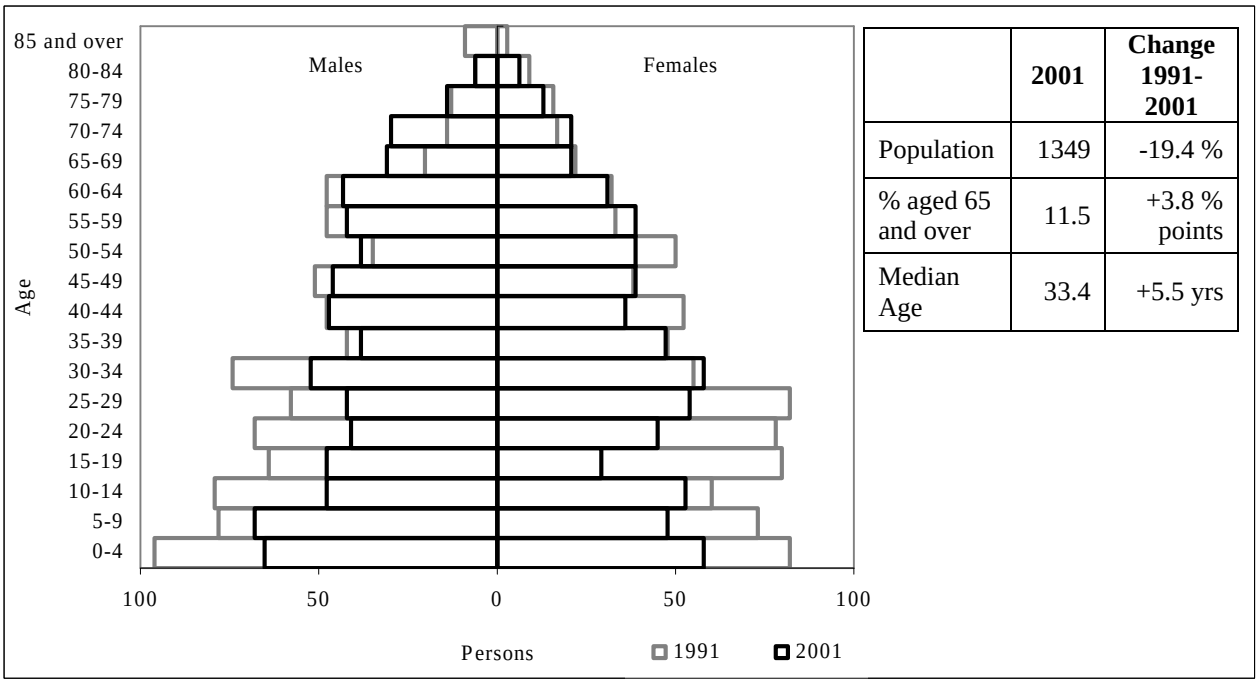
Source: ABS 2001 unpublished data

6.5 Case study: Cunnamulla and Winton

Figures 6.2 and 6.3 detail the changing population age structures of two inland towns; Cunnamulla and Winton, between 1991 and 2001. Both towns are located within the Pastoral Zone and had similar enumerated populations at the 2001 Census (Cunnamulla, 1349; Winton, 1321). However, Cunnamulla experienced a decline of -19.4 percent over this period, whilst Winton's enumerated population increased by 14.3 percent.

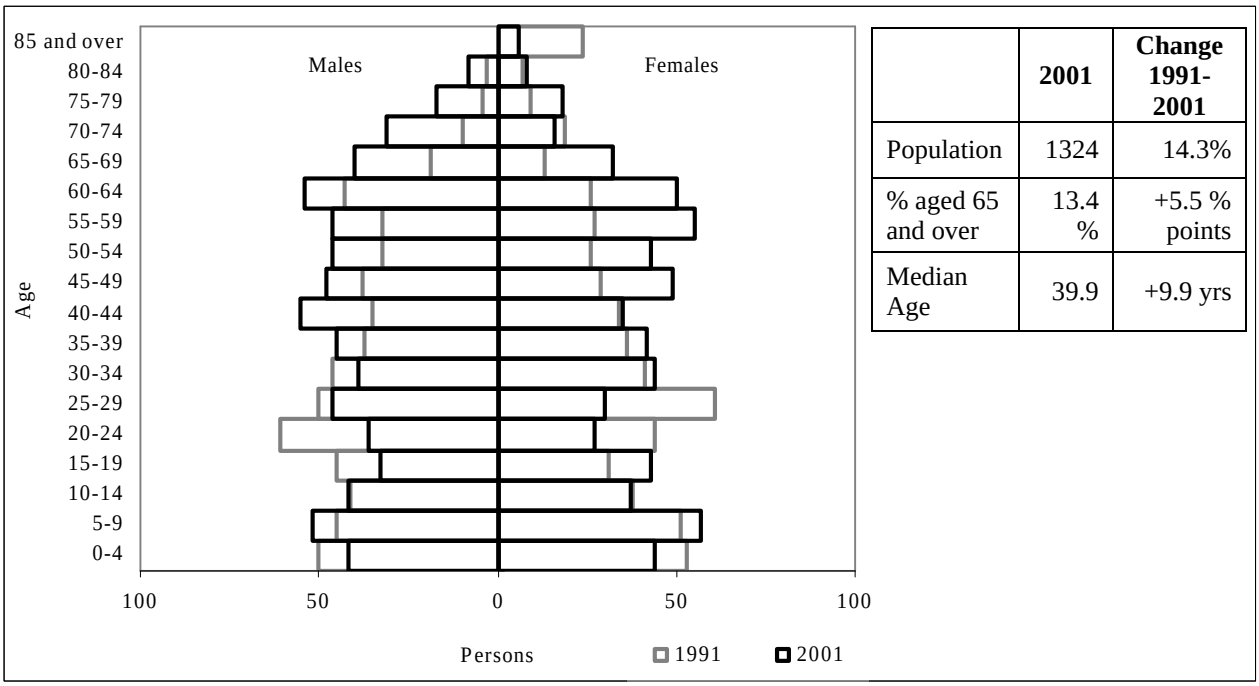
Over the decade, 1991 to 2001, both towns underwent significant ageing of their populations, with the proportion of population aged 65 and over increasing by 3.8 and 5.5 percentage points for Cunnamulla and Winton respectively. Closer examination of the age structure of these two communities suggest that different processes are responsible for the ageing of these populations; namely, the loss of younger residents in Cunnamulla, and an increase in the older cohorts in Winton.

An important caveat on the figures presented above is that they include visitors to the town on the night of the Census; not just usual residents. This is particularly significant in the case of Winton, which is a popular destination for "grey nomads". The timing of the Census during outback Queensland's peak tourism season significantly distorts the age profile of Winton, and is probably responsible for the over-representation of older cohorts in the town. Indeed, further evidence for this may be garnered from the age profiles of Paroo and Winton Shires, which include the towns of Cunnamulla and Winton, with only 10.5 percent and 10.2 percent of their 2001 estimated resident population aged 65 and over.



	2001	Change 1991-2001
Population	1349	-19.4 %
% aged 65 and over	11.5	+3.8 % points
Median Age	33.4	+5.5 yrs

Figure 6.2: Age/Sex Structure, Cunnamulla (UCL); 1991-2001
Source: ABS, Basic Community Profiles, 1991, 2001



	2001	Change 1991-2001
Population	1324	14.3%
% aged 65 and over	13.4 %	+5.5 % points
Median Age	39.9	+9.9 yrs

Figure 6.3: Age/Sex Structure, Winton (UCL); 1991-2001
Source: ABS, Basic Community Profiles, 1991, 2001

The influence of temporary or non-resident populations, particularly these so-called “grey nomads”, on inland communities must be incorporated into any analysis of population ageing within inland Queensland. As illustrated, visitor populations can have a significant impact on the age structure of inland towns. Unfortunately, very little is currently known about the size and service requirements of these temporary populations.

6.6 Population Projections

Population projections are an important tool for predicting the impacts of population ageing across Queensland. The heterogeneity in the proportion of the population aged 65 and over in 2001 (Figure 6.1) suggests that the impacts of population ageing are likely to have a marked geographical dimension. Therefore the development of small area population projections is critically important in the planning of future service and funding requirements at the local level. Unfortunately, the development of population projections at the small area level which are able to incorporate significant temporal and spatial variation in age specific migration is a significant challenge.

Table 6.4: Population Ageing, Settlement Zones, 2001-2026

Settlement Zones	Percentage of Population aged 65 and over	
	2001	2026
Southeast Queensland	11.9	19.7
Coastal Queensland	11.4	20.7
Agricultural Queensland	11.9	21.8
Pastoral Queensland	9.9	14.2
Remote Interior	5.3	14.2
Remote Northern	4.8	15.3
Queensland	11.6	20.0

Source: PIFU 2003

The Queensland Government's Planning Information and Forecasting Unit (PIFU) has developed a series of population projections for Queensland Local Government Areas. The percentage of population aged 65 and over for settlement zones in 2026 is shown in Table 6.4. According to these projections, by 2026 Agricultural Queensland will have the highest proportion of population aged 65 and over in Queensland (21.8%), while the Remote Interior will have the youngest population with only 14.2% of the population aged 65 and over. The population projections developed by PIFU are dependent upon assumptions of age-specific migration rates which have the potential to vary significantly over time (PIFU 2003).

6.7 The Impact of Population Ageing on Inland Communities

The impacts of population ageing on a community can be wide-ranging, and can vary depending upon the particular age structure of a given community. The numerical increase in the population aged 65 and over across Queensland presents significant challenges for the provision of health and community services, whilst the structural ageing of a community, particularly when driven by the out migration of young people, can have significant impacts on the social and economic sustainability of a community. The characteristics of the elderly community also need to be taken into account when examining potential impacts of population ageing on a community. Age, health, disability, socioeconomic status, proximity to family, and personal mobility not only affect demand for services but also the level of social and economic capital contributed to a community by its older residents.

Table 6.5 lists some of the positive and negative impacts of population ageing categorised by the dominant migration processes driving the change in age structure. Whilst this list is not exhaustive, it provides some indication of the impacts of population ageing within different contexts.

Table 6.5: Migration and the impacts of population ageing on inland communities

	Negative Impacts	Positive Impacts
Selective out-migration of young people	▪ Loss of human capital ▪ Loss of social capital (including sporting teams) ▪ Loss of services for younger ages (inc. Schools) ▪ Ageing of farming population ▪ Population decline	▪ Increase in human capital upon return migration
Retirement migration	▪ Increased demand on health care and other community services ▪ Population growth	▪ Development of a "grey" economy ▪ Increase in social capital (inc. Volunteerism) ▪ Increase in human capital
Retention of elderly residents	▪ Increased demand on health care and other community services	▪ Maintenance of family and friendship networks

The ageing population of many declining communities is the result of the latter two migration processes, which may result in more negative impacts of population ageing than occurs in the high-amenity retirement destinations.

6.8 Conclusion

The spatial variability in population ageing across Queensland presents significant challenges for planners and policy makers attempting to provide adequate services at the Local Government Area level. Furthermore, the sensitivity of population age structure to variations in local migration age schedules makes it difficult to accurately forecast future service requirements. Nevertheless, broad regional patterns of ageing provide some indication of the concentration of Queensland elderly population, namely within the Agricultural, Coastal and Southeast Zones. For regional areas where much of the population ageing is driven by out migration of population at younger ages, and the retention of elderly residents, the negative impacts of population ageing are likely to be greater than for high-amenity regions attracting migrants of retirement age, particularly in terms of community sustainability. Significantly more research needs to be undertaken on population ageing at the regional scale to understand the impacts of the different demographic contexts within which ageing occurs and the characteristics of elderly residents for whom these communities are home.

Much will depend in the future on decisions by older residents of rural communities as to whether to stay or leave. If Tonts' (2000) observations are correct and there is greater retention, the likely burden for services will rise substantially-on the other hand if services are not provided, this in itself may well reduce the incentive to stay. Ultimately, however, it is not the older population who will determine the viability of inland towns but the town's ability to attract, and retain, a young, vibrant and energetic workforce.

7 Conclusions

This study set out to provide a systematic analysis of recent and contemporary trends in the evolution of Queensland's rural and remote settlement pattern. Despite the increasing dominance of coastal areas as the prime focus of Australia's settlement pattern, and the primacy of the metropolitan cities, rural and remote regions continue to perform a critical role in the Australian space-economy. Patterns of settlement away from the coast are fundamentally connected to the nature and distribution of economic resources, to the hierarchy of service centres, and to the associated transportation network. Underlying this is a distinctive pattern of indigenous occupance. What is most strongly apparent for both indigenous and non-indigenous populations is that both the overall intensity or level of occupation, and the patterns of settlement, are in a continuous state of flux, driven by a maze of economic, social, demographic and technological forces. Shifts in regional policy, priorities and programs, too, influence evolution of the settlement landscape.

This report has been particularly concerned to understand the spatial variability in population change, the underlying population dynamics, and the links between towns and rural areas. Our focus has centred especially on the experience of the last three decades, drawing on a unique database assembled from painstaking analysis of data from successive Population Censuses. The particular advantage of this database is in tracking the growth of individual urban centres in Queensland and their rural hinterlands. The geographic classification used in the Australian Census data does not provide the spatial focus needed to analyse population movements between rural and urban centres in the way that is possible in countries such as New Zealand. Despite this, it does offer unprecedented insights into the dynamics of recent population change in Queensland. For the purposes of analysis we have also divided the State into six broad zones based on land use and population density (Figure 3.2).

What emerges most strongly from the evidence presented here is the extreme variability in the pattern of population change across rural and remote areas of Queensland, both from place to place, and through time. There is a clear divide between rapidly growing coastal areas and the southeast corner of the state, on the one hand, and inland Queensland, on the other, though this is by no means as sharply differentiated as commonly perceived. Coastal growth is increasingly confined to relatively few 'hotspots' and major coastal centres. In a similar way, localised areas of growth can be identified across parts of inland Queensland. The broad picture, though, for regions away from the coast has been one of sustained out-migration and population decline, punctuated, in both space and time, by episodic growth in particular centres, or by outliers that have proven more resilient to regional trends. It is the Pastoral Zone and Remote Interior that have shown the most sustained history of population decline. Taken as a whole the Agricultural Zone has fared much better, but analysis at a finer grain shows that growth here, as in coastal regions and the southeast, has been population-led rather than employment-led, and is focused mainly around the regional city of Toowoomba. In a similar way, population trends in Remote Northern Queensland reflect the unique circumstances and dynamics of indigenous settlement.

Superimposed on this broad canvas, the evolving pattern of human settlement in rural and remote Queensland resembles an undulating patchwork with alternating periods of growth and decline, accompanied often by differential trends in urban centres and their rural hinterlands. First inspection offers little evidence of any simple explanation to account for this complex mosaic. As argued in this report, however, there are a number of consistencies that emerge from closer analysis. Pre-eminent among these is that the population gains evident in many

towns from time to time can generally be traced to particular events, investments, or economic impulses in the town itself or its surrounding area. The result is reversal of an often longstanding period of decline, but one whose impact on population is not long sustained. In some areas, the settlement system, currently, is in closer balance with the local resource base, thereby sustaining more stable population counts. This is especially apparent in the coal mining centres of Central Queensland. In pastoral and remote areas, on the other hand, as in the Agricultural Zone away from Toowoomba, it is clear that small towns have progressively lost population to larger neighbouring centres in a process of continued centralisation. Only where smaller settlements offer high amenity residential opportunities does proximity to a larger centre act as a trigger to growth.

The links between towns and their surrounding rural centres are more complex and difficult to untangle. In general, population trends in the two settlement domains move in tandem, though often with some temporal lag: declining rural numbers may be echoed in the town in the following period. There is little direct evidence of towns simply absorbing rural inhabitants, as suggested by the 'sponge city' hypothesis. At the same time it is evident that migration to, from and between inland regions remains an intrinsic and crucial element of the population dynamics shaping rural and remote Queensland. Young adults have always been a key element in these streams with substantial outflows of school leavers in search of training and employment in Brisbane and regional centres. This continued for the Agricultural Zone in the late 1990s, with return migration of a proportion of these earlier out-migrants at later ages. There is also rising evidence of in-migration by older workers and retirees to selected high amenity localities in the Agricultural Zone, as attractive coastal destinations become more out-of-reach.

In Pastoral Queensland and the Remote Interior, on the other hand, the evidence assembled here suggests that migration flows are now dominated by a relatively small influx of young adults to fill specialised jobs in agriculture, mining and the public service sector 'spiralists', including teachers, police and other professionals. Here, migration is now governed entirely by employment opportunities, and temporary migration increasingly substitutes for permanent movement. While aggregate numbers in particular localities will doubtless continue to rise and fall, the evidence would suggest that the level of human settlement in these areas has now reached a minimum level consistent with employment opportunities, and is unlikely to experience any significant further fall. At the same time, it is evident from the material examined elsewhere in this report that there is no general minimum population below which an urban centre will no longer be self-sustaining. Population dynamics in rural and remote areas are complex; individual centres have proven remarkably resilient over time, and subtle factors often differentiate those experiencing growth from others undergoing decline.

While the prospects for individual localities are impossible to predict, one demographic trend that all rural and remote areas will experience over coming years is the ageing of their populations. The remote interior and remote northern settlement zones currently have the youngest populations of all Queensland regions, reflecting the particular employment profile of the region and, for the north, the influence of indigenous population dynamics. Both regions are predicted to experience substantial ageing over coming decades, but the proportion of older people will probably remain low in comparative terms. Future trends in the Pastoral and Agricultural zones, on the other hand, are much less certain. Current proportions of older residents are similar to the State average and Queensland Government projections anticipate a sustained rise in parallel with national trends over the next 20 years. For towns attracting amenity-led in-migration of retirees, these gains portend a significant rise in demand for specialised services in future years. Elsewhere, however, the extent of increase

in the older population will itself be dependent, to a significant extent, on the breadth and diversity of services provided within the area. While other observers have noted increasing retention of older people in regional settings, there is also clear evidence of out-migration from regional Australia in the face of persistent health problems among some population groups (Larson et al. 2004), and the likely locational decisions of future decades of older residents of rural and remote areas are by no means certain.

The ultimate aim of this report, and the accompanying database, is to provide decision-makers in government with a more informed basis on which to act with regard to provision of services and infrastructure to rural and remote areas. As demonstrated in this report, population trends in rural and regional areas are underpinned by complex interactions between demography, human geography, and the distribution of economic resources. But state and federal policies, global trends, and changing technologies also exert a significant impact on population prospects and outcomes in localised settings. The balance of outcomes, at the local level, necessitates close and ongoing scrutiny.

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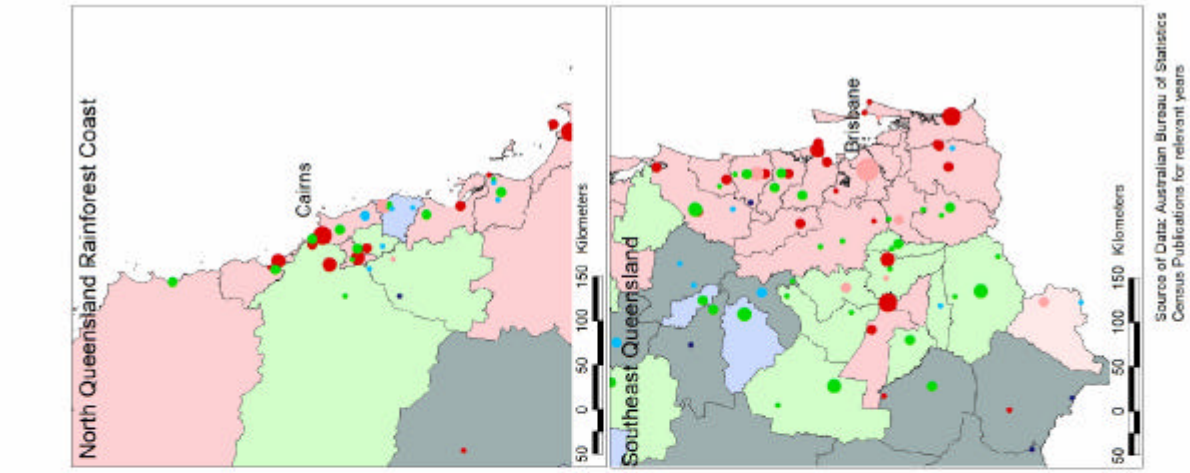
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Cairns
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Southeast Queensland
Brisbane
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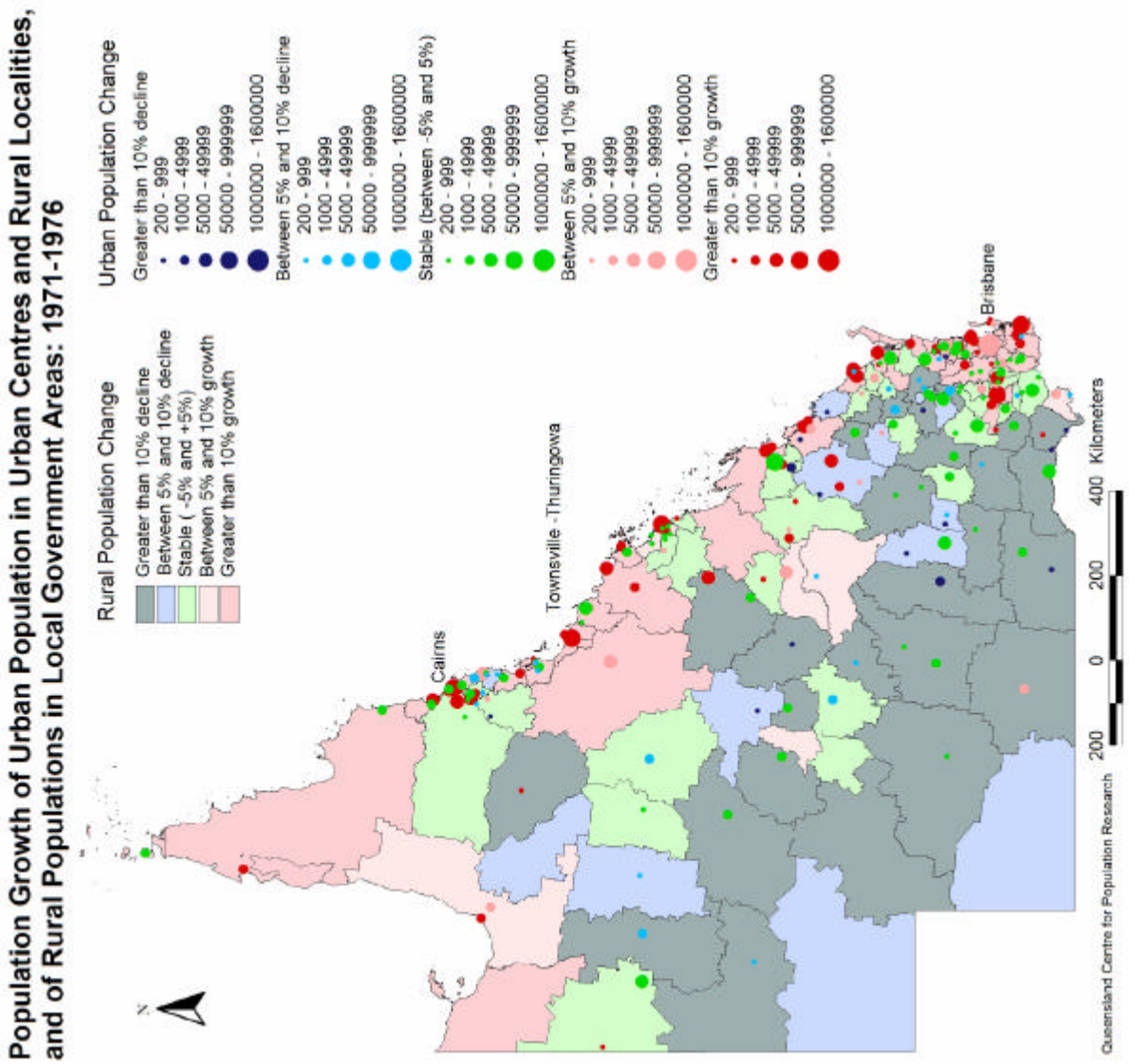
Source of Data: Australian Bureau of Statistics
Census Publications for relevant years


Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1971-1976
Rural Population Change
Greater than 10% decline
Between 5% and 10% decline
Stable (-5% and +5%)
Between 5% and 10% growth
Greater than 10% growth
Urban Population Change
Greater than 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Stable (between -5% and 5%)
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Greater than 10% growth
200 - 999
1000 - 4999
5000 - 49999
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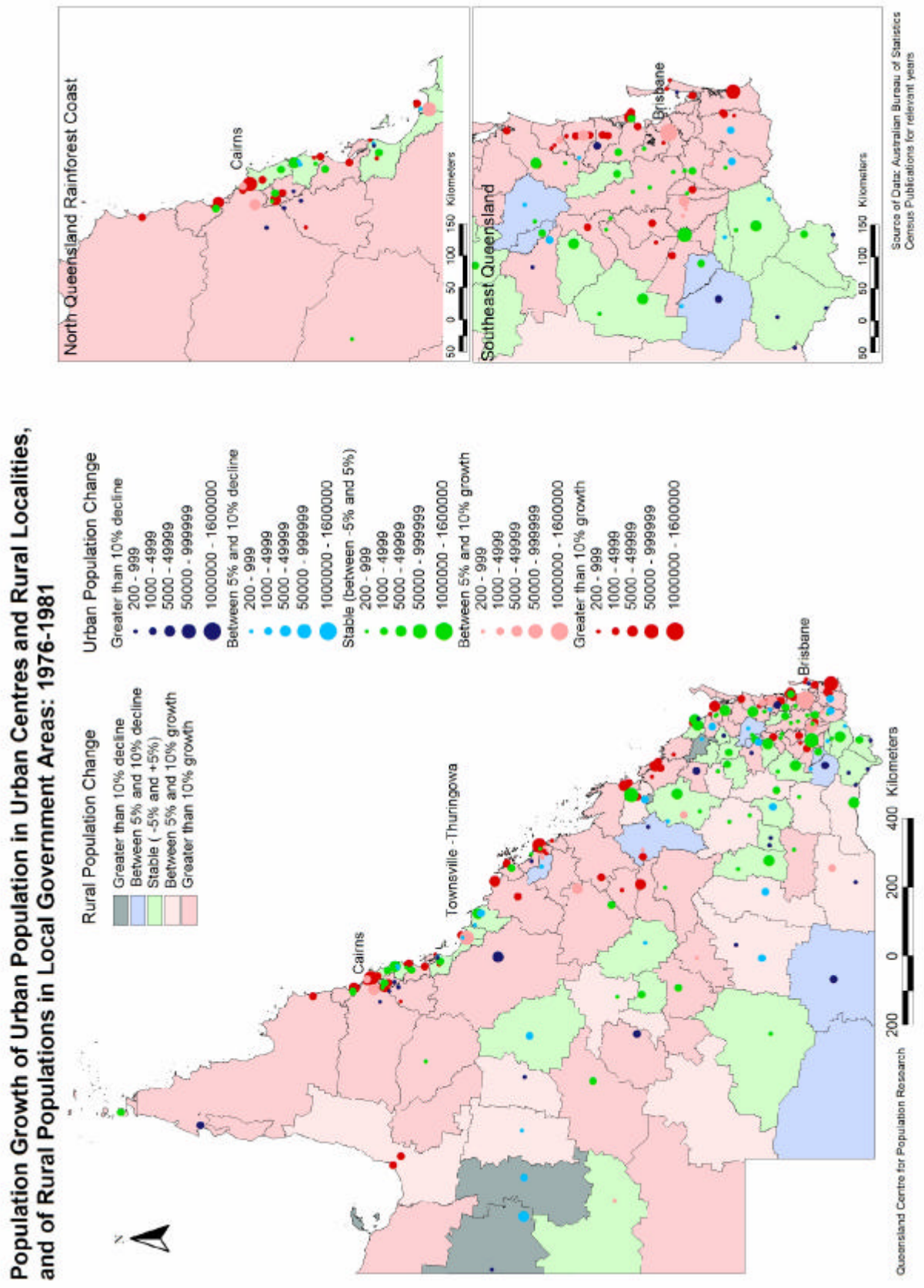
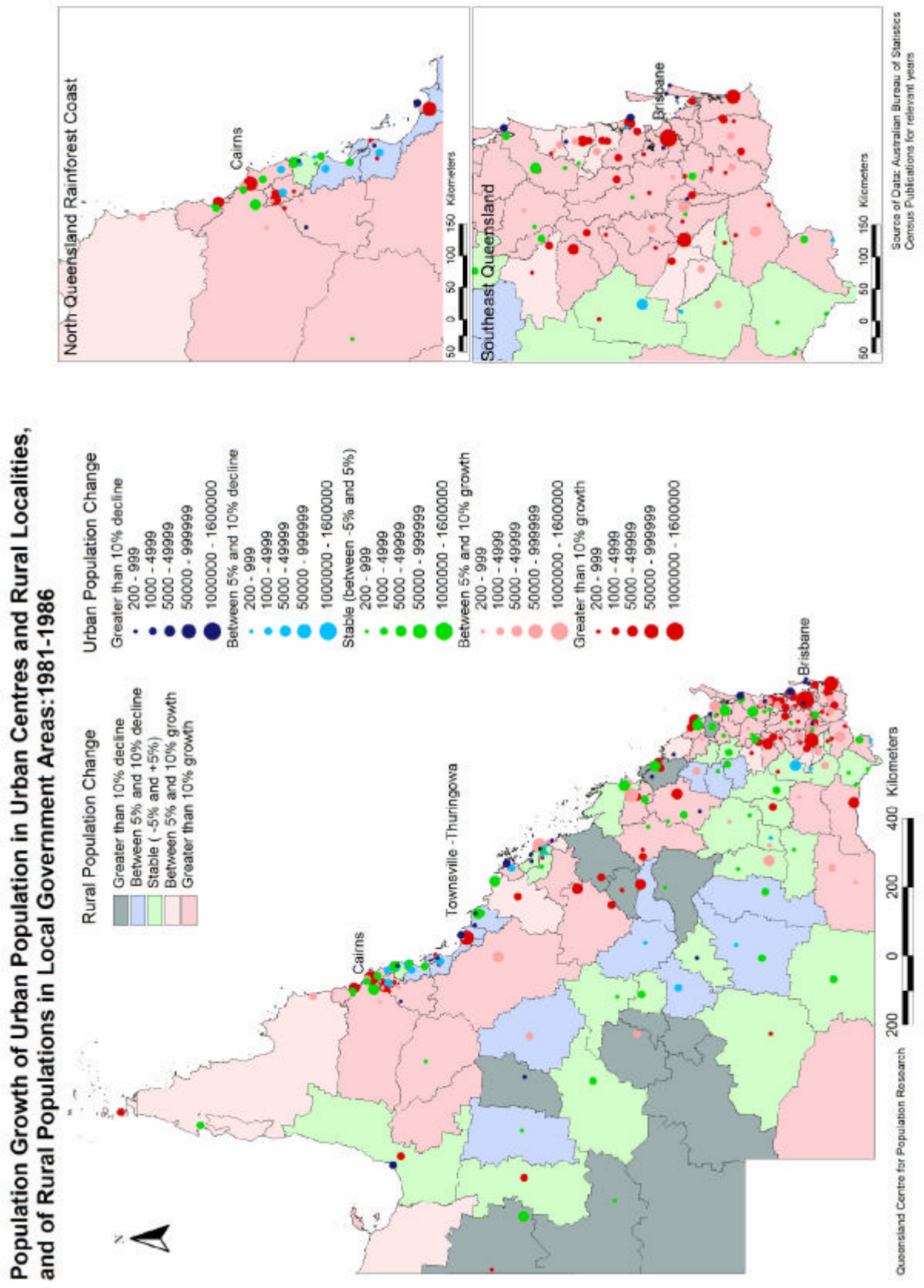
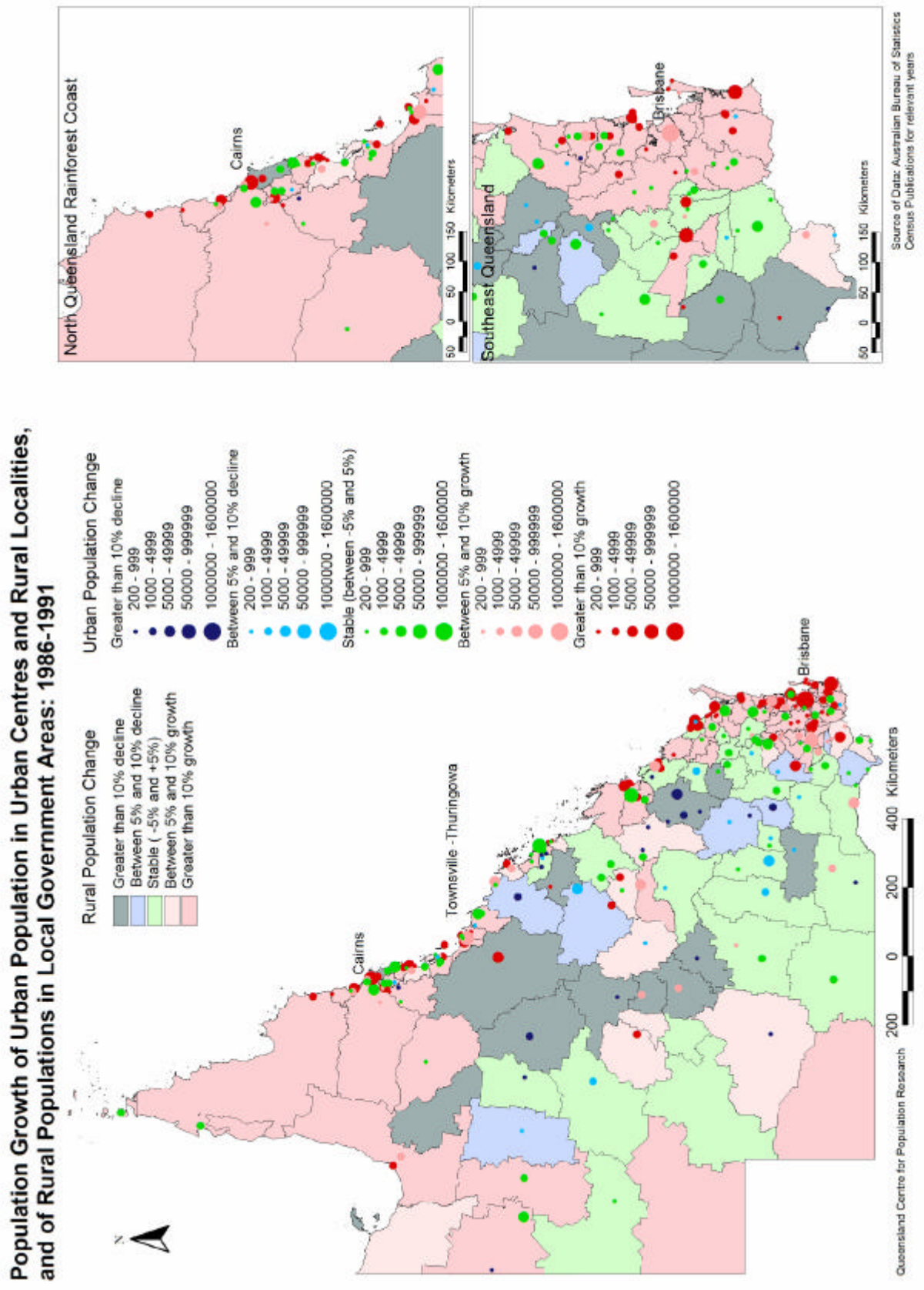
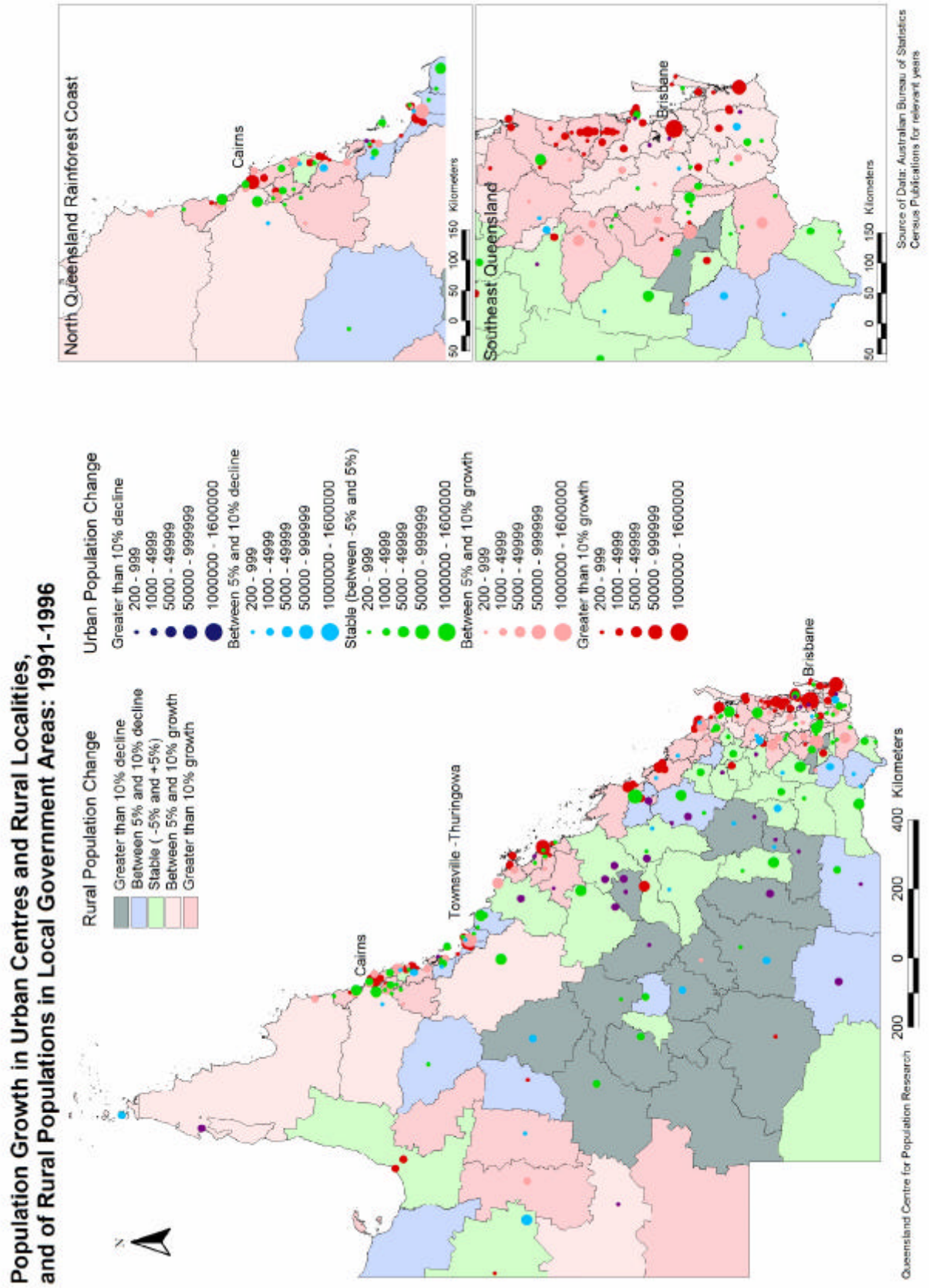
1000000 - 1600000
N
Cairns
Townsville - Thuringowa
Brisbane
200 0 200 400 Kilometers
Queensland Centre for Population Research


Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1976-1981
Rural Population Change
Greater than 10% decline
Between 5% and 10% decline
Stable (-5% and +5%)
Between 5% and 10% growth
Greater than 10% growth
Urban Population Change
Greater than 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Stable (between -5% and 5%)
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Greater than 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Cairns
Townsville - Thuringowa
Brisbane
200 0 200 400 Kilometers
Queensland Centre for Population Research
North Queensland Rainforest Coast
Cairns
50 0 50 100 150 Kilometers
Southeast Queensland
Brisbane
50 0 50 100 150 Kilometers
Source of Data: Australian Bureau of Statistics Census Publications for relevant years


Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas:1981-1986
Rural Population Change
Greater than 10% decline
Between 5% and 10% decline
Stable (-5% and +5%)
Between 5% and 10% growth
Greater than 10% growth
Urban Population Change
Greater than 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Stable (between -5% and 5%)
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Greater than 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Cairns
Townsville - Thuringowa
Brisbane
200 0 200 400 Kilometers
Queensland Centre for Population Research
North Queensland Rainforest Coast
Cairns
0 50 100 150 Kilometers
Southeast Queensland
Brisbane
0 50 100 150 Kilometers
Source of Data: Australian Bureau of Statistics Census Publications for relevant years


Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1986-1991
Rural Population Change
Greater than 10% decline
Between 5% and 10% decline
Stable (-5% and +5%)
Between 5% and 10% growth
Greater than 10% growth
Urban Population Change
Greater than 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Stable (between -5% and 5%)
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Greater than 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Cairns
Townsville - Thuringowa
Brisbane
200 0 200 400 Kilometers
Queensland Centre for Population Research
North Queensland Rainforest Coast
Cairns
50 0 50 100 150 Kilometers
Southeast Queensland
Brisbane
50 0 50 100 150 Kilometers
Source of Data: Australian Bureau of Statistics
Census Publications for relevant years


Population Growth in Urban Centres and Rural Localities,
and of Rural Populations in Local Government Areas: 1991-1996
Rural Population Change
Greater than 10% decline
Between 5% and 10% decline
Stable (-5% and +5%)
Between 5% and 10% growth
Greater than 10% growth
Urban Population Change
Greater than 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Stable (between -5% and 5%)
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Greater than 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
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Cairns
Townsville - Thuringowa
Brisbane
200 0 200 400 Kilometers
Queensland Centre for Population Research
North Queensland Rainforest Coast
Cairns
50 0 50 100 150 Kilometers
Southeast Queensland
Brisbane
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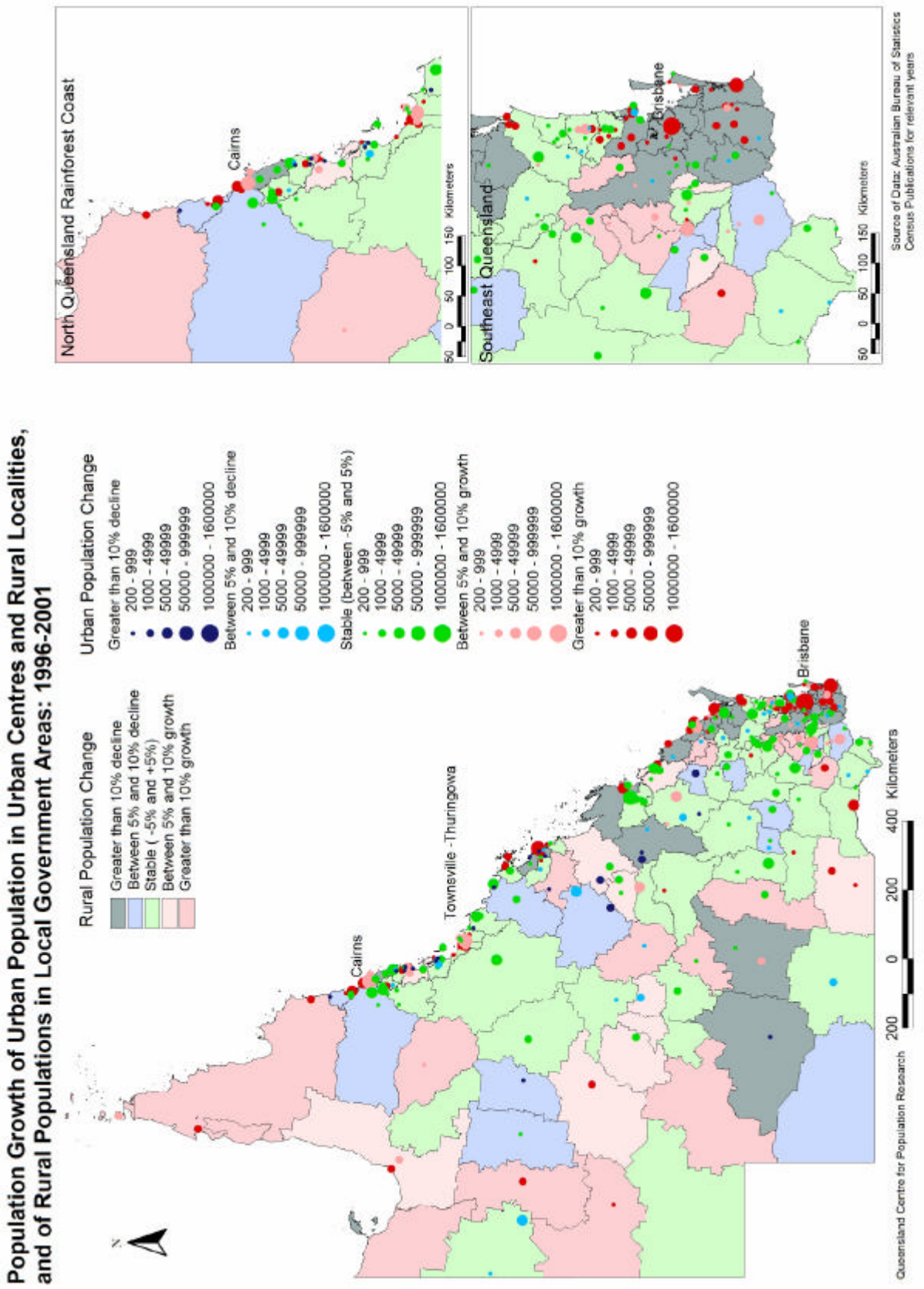
Source of Data: Australian Bureau of Statistics
Census Publications for relevant years


Population Growth of Urban Population in Urban Centres and Rural Localities, and of Rural Populations in Local Government Areas: 1996-2001
Rural Population Change
Greater than 10% decline
Between 5% and 10% decline
Stable (-5% and +5%)
Between 5% and 10% growth
Greater than 10% growth
Urban Population Change
Greater than 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% decline
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Stable (between -5% and 5%)
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Between 5% and 10% growth
200 - 999
1000 - 4999
5000 - 49999
50000 - 999999
1000000 - 1600000
Greater than 10% growth
200 - 999
1000 - 4999
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Cairns
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200 0 200 400 Kilometers
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North Queensland Rainforest Coast
Cairns
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Southeast Queensland
Brisbane
50 0 50 100 150 Kilometers
Source of Data: Australian Bureau of Statistics Census Publications for relevant years