The Redistribution of Regional Population and Employment during the Economic Boom in Australia

By

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Throughout the 1990s, there were significant changes in population and employment distribution throughout many regions of Australia. Of notable significance were the high population and employment growth rates in outer-metropolitan areas and also in coastal areas. Growth rates in capital cities and in rural and remote areas of Australia were much lower. A combination of changes in industry mix, together with new technologies, and policy and regulatory changes are likely contributory factors. In some cases, drought, lifestyle choices and welfare-led interregional migration also appear likely to have contributed to population and employment changes. These changes have impacted on the characteristics and composition of the population and labour force in various regions. The purpose of this paper is to examine population and employment changes by region into the 2000s, and to identify any changes from the previous decade. Emerging trends will be identified and the possible causes of any new trends will be examined. This will provide insight into the needs and policy issues facing particular regions in Australia, including issues such as skills shortages and economic and social infrastructure provision.

Keywords: Regional; Labour markets; Population; Structural change, Migration

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1. Introduction

Almost 27 per cent of the Australian population live outside capital cities and other metropolitan areas (ABS 2006a). Over the past two decades there have been significant changes in the distribution of population and employment between not only urban and non-urban areas, but also between coastal, inland and remote areas. These changes have become more pronounced during the so-called economic boom years of the early 2000s.

Estimates of these differences using broad regional classifications have often not identified the full extent of population and employment shifts. This study adopts a method of classifying regions which enables a clearer picture of the changes that have been occurring within and between regions during the period 1991 to 2006 using Australian Bureau of Statistics (ABS) Census data.

The following section briefly outlines many of the commonly used methods of regional classification in Australia, and provides details of the regional classifications used in this analysis. It then presents regional changes in population and employment in Australia for the period 1991 to 2006, with more emphasis on the most recent changes. Following this, *net* population changes throughout Australia's regions are calculated, to provide insights into where people are moving from and going to. Discussion of possible explanations for the changes that have occurred will then be put forward. This will include an analysis of role of the agricultural sector in the more recent population and employment changes, given that the droughts of the early to mid-2000s have contributed to some quite dramatic changes in remote areas in Australia. Implications for regional and rural policy are also discussed.

2. Methods of Regional Classification

There have been a number of different methods used to create spatial regions in Australia for the purpose of population and labour market analysis. Regional classification systems usually aim to group areas that are similar in terms of geographic and economic characteristics, and often social, cultural and environmental amenity characteristics. However, given the diversity of these characteristics across Australia, any system of classification will have some inconsistencies. Ultimately the

final choice is influenced by the purpose of the analysis and the availability and cost of the data.

Over the past two decades some of the commonly used methods of regional classification include the following:

- Australian Bureau of Statistics – Section of State (Census data, various years)
- Australian Bureau of Statistics – Remoteness Structure (ABS 2003)
- Department of Health and Aged Care – Accessibility/Remoteness Index of Australia (ARIA), (Department of Health and Aged Care 2001)
- Productivity Commission – regional classification system, (Productivity Commission 1999)
- Australian Bureau of Agricultural and Resource Economics (ABARE) – regional classification system, (Australian Bureau of Agricultural and Resource Economics 2001)
- Department of Primary Industries and Energy/Department of Human Services and Health – Rural, Remote and Metropolitan Areas (RRMA) classification, (Department of Primary Industries and Energy/Department of Human Services and Health 1994)
- Griffith Service Access Frame (1994) – rural/remote classification

For many Censuses, the ABS has used the Section of State classification which comprises four geographic classifications. However, this method is very broad, with one region – 'Other Urban' – incorporating towns with populations of between 1000 and 100 000. Further, coastal regions are not identified. In recent years, the ABS Remoteness Structure has been more widely for analysis of Census data. However it also does not contain a coastal classification, which therefore does not enable the identification of the rapid population growth experienced in many coastal regions throughout Australia. Further, the Remoteness Structure classifies Hobart and Darwin as 'Inner Regional' and 'Outer Regional' respectively, rather than as cities. It is argued here that capital cities have important differences from regional areas, particularly in terms of access to services.

Similar issues apply to most of the other regional classification systems, with none containing a coastal region, with the exemption of the Productivity Commission's and ABARE's regional classification systems. Further details of the

strengths and weakness of these methods can be found in Garnett (2007) and Garnett and Lewis (2007).

The method of regional classification used in this study is that developed by the Australian Bureau of Agricultural and Resource Economics (ABARE) (2001). The regions are classified by Statistical Local Area[1] (SLA) into five main regions:

- Capital Cities: Eight capital cities
- Other Metropolitan: SLAs other than in capital cities that contain whole or part of an urban centre with a population of 100 000 or more
- Coastal: SLAs within 80 kilometres of the coastline
- Remote: Coded by road distance between populations and from the nearest urban centre, according to the ARIA[2]
- Inland: All remaining SLAs

As the above method contains two metropolitan classifications, this enables the analysis of some very specific and significant changes that some other regional classifications do not capture. As will be discussed later, there has been significant growth over the past two decades in metropolitan centres outside capital cities, with these towns and cities changing their characterising features from rural to urban over time. Further, the ABARE method separates coastal regions from other regions, which is important for regional analysis given the rapid growth since the 1990s of many coastal regions. ABARE also uses a remote classification, which is important in identifying major population and employment shifts affecting remote areas in recent years. Not all classification methods specifically identify remote areas, instead including remote localities within a more general classification of 'rural' localities. In this study, this would not be sufficient, as some remote localities are characterised by quite diverse industrial, population, infrastructure and even cultural factors. For example, the industrial base in some remote areas is not agriculture, but is mining based, which is often associated with a significant number of 'fly in/fly-out' workers.

[1] In aggregate, Statistical Local Areas cover the whole of Australia without gaps or overlaps. In non-Census years, the SLA is the smallest unit defined in the Australian Standard Geographical Classification. During Census years an SLA consists of one or more collection districts.

[2] The Accessibility/Remoteness Index of Australia (ARIA) was devised by the Department of Health and Aged Care (2001). This index classifies Statistical Local Areas (SLAs) according to their distance from a major centre. It has been updated by the ABS to ARIA Plus.

Further, some remote communities are largely populated by Indigenous people, which also have different industrial bases and often very different labour market programmes.

3. Population and Employment Changes in Australia, 1991 to 2006

Table 1 provides a snap-shot of the distribution of Australia's population and employment by region in 2006. As can be seen, 63.9 per cent of the population live in capital cities and 9.4 per cent live in other metropolitan areas. This leaves a significant proportion of the population – almost 27 per cent – living outside of capital cities and other metropolitan areas, with around 15 per cent living in inland and remote areas (sometimes referred to here as 'rural Australia'). From Table 1 it can also be seen that the pattern of employment is similar to the population patterns throughout the regions. However, with 66 per cent of total employment occurring in capital cities, it is evident that capital cities comprise a greater proportion of jobs than it does of the population. This is a result of the dominance of the service sector in capital cities. The other most noticeable difference between share of population and share of employment is in coastal areas, which comprises 10.5 per cent of employment, but 11.7 per cent of the population. As will be discussed later, this can in part be explained by a higher relative proportion of retired people and unemployed people living in coastal areas.

Table 1: Regional Distribution of Population and Employment, 2006, per cent

Region	Population	Employment
Capital Cities	64.0	66.0
Other Metropolitan	9.4	9.1
Coastal	11.7	10.5
Inland	12.6	12.1
Remote	2.3	2.3

Source: ABS (2006a).

Of more relevance for economic and social policy analysis is the rate of change in population and employment in regions over time. Table 2 and Table 3 show these changes between three census periods: 1991-1996; 1996-2001; and 2001-2006.

Some very significant trends emerge in both population and employment, particularly in the 2000s. From Table 2, it can clearly be seen that the rate of growth in population in capital cities has been increasing over time, from a growth rate of 5.8 per cent between 1991 and 1996, to a growth rate of 6.4 per cent between 2001 and 2006. Also significant is the fall in population growth rates in other metropolitan areas, from 11.3 per cent to 7.1 per cent over the same time period. However, it is important to note that the population growth rate in other metropolitan areas still remains the highest of all the regions in Australia.

Table 2: Regional Population Growth, 1991-1996, 1996-2001, and 2001-2006, per cent

Region	Population growth 1991-1996	Population growth 1996-2001	Population growth 2001-2006
Capital Cities	5.8	5.9	6.4
Other Metropolitan	11.3	8.8	7.1
Coastal	9.3	4.5	5.8
Inland	1.2	1.4	4.1
Remote	3.2	0.5	2.9
Australia	6.0	5.2	5.5

Source: ABS (1991, 1996, 2001, 2006a).

The population growth rates in coastal areas for the census periods 1996-2001 and 2001-2006 are lower than in the first half of the 1990s, when coastal areas experienced very rapid increases in population. Inland areas have experienced an increase in the rate of population growth between 2001 and 2006 – although is still lower than the national average population growth rate. Table 2 also shows the continually low population growth rates in remote areas in Australia. The population growth rate was 3.2 per cent, 0.5 per cent and 2.9 per cent respectively over the three census periods. The relatively low population growth rates in inland and remote areas have had, and no doubt will continue to have, wide-ranging effects on employment, future public services such as medical and education, and on private sector businesses in remote communities. As is discussed later, it is also manifesting itself in significant

labour shortages in some areas. Possible causes for these low population growth rates will also be analysed later in this paper.

The examination of employment growth by region reveals some very important changes over time. Table 3 shows employment growth by region over three census periods. The overall increase in the rate of growth of employment exceeded population growth over this time period and is consistent with the growing economic prosperity experienced in Australia and, arguably, labour market reforms. The period between 2001 to 2006 experienced some of the highest rates of net jobs growth in both full-time and part-time employment since the 1980s (ABS 2006a).

Table 3: Regional Employment Growth, 1991-1996, 1996-2001 and 2001-2006, per cent

Region	Employment growth 1991-1996	Employment growth 1996-2001	Employment growth 2001-2006
Capital Cities	8.0	9.4	9.5
Other Metropolitan	14.0	11.2	15.5
Coastal	10.1	7.2	13.3
Inland	2.0	5.9	7.8
Remote	4.4	2.3	-4.3
Australia	7.7	8.7	9.5

Source: ABS (1991, 1996, 2001, 2006a).

The rate of employment growth has been fastest in other metropolitan areas, reaching a growth rate of 15.5 per cent between 2001 and 2006. The second highest rate of employment growth was in coastal areas, which experienced a significant jump in the rate of employment growth between the 1996-2001 period and the 2001-2006 period, from 7.2 per cent to 13.3 per cent. Capital cities experienced strong employment growth, however, the rate of increase in the growth rate was small between the 1996-2001 period and the 2001-2006 period, increasing from 9.4 per cent to 9.5 per cent. The rate of increase in employment growth in inland regions, while lower than the national average, has, none-the-less, been remarkable, as employment growth rates rose from 2 per cent during the 1991-1996 period to 7.8 per cent during

the 2001-2006 period. The notable exception to the recent increase in the rate of employment growth in all regions occurred in remote Australia. The negative employment growth rate of -4.3 per cent between 2001 and 2006 stands in stark contrast with all other regions in Australia. It is also worth noting that some of the employment in certain remote areas may be overstated. The reason for this relates to the Commonwealth Community Development Employment Projects (CDEP) scheme for Indigenous people, which was in full operation until 2008, with around half of all employment in some areas generated by this scheme (Hunter 2002). It has been argued that the employment status of participants in the scheme was ambiguous (Hunter 2002), which means that the census data overstate remote employment in those localities with a significant proportion of Indigenous people.

To better understand the changes in employment that have occurred, and in particular, the very significant changes that occurred between 2001 and 2006, it is useful to look at the share of employment by industry. Tables 4a and 4b show employment by industry as a proportion of total employment for each region in 2001 and 2006. Clearly, the trend for employment in agriculture and manufacturing as a proportion of total employment was declining in all regional classifications. The fall in the proportion of people working in agriculture was the greatest in inland regions, falling from 15.6 per cent in 2001 to 12.9 per cent in 2006. Not surprisingly, the fall in the proportion of people employed in manufacturing was greatest in capital cities and other metropolitan areas. Over the same period, employment in the mining and services sectors as a proportion of total employment was rising in all regional classifications. There was a large rise in the proportion of people working in mining in coastal areas, from 1.1 per cent in 2001 to 1.8 per cent in 2006, which is an increase of close to 8 000 mining jobs (ABS 2006a). This reflects the development and expansion of major gas and minerals projects, particularly in coastal areas throughout Western Australia and New South Wales. Also evident is that while the minerals and energy boom has created jobs in almost all regions, the largest number of jobs have been created in capital cities. Employment in mining as a share of total employment in capital cities doubled from 0.3 per cent to 0.6 per cent, which in numerical terms is 16 406 jobs - more than double the amount of jobs created in coastal areas, and 3 to 4 times as many mining jobs created in inland, remote and other metropolitan areas (ABS 2006a).

Table 4a: Employment by Industry and Region, 2001, per cent

Region	Agriculture	Mining	Manufacturing	Services	Total
Capital cities	0.9	0.3	13.0	85.8	100
Other metropolitan	1.1	1.0	11.3	86.6	100
Coastal	9.5	1.1	11.0	78.4	100
Inland	15.6	1.4	11.0	72.0	100
Remote	14.9	10.6	4.7	69.8	100
Australia	4.0	0.9	12.2	82.9	100

Source: ABS (2001).

Table 4b: Employment by Industry and Region, 2006, per cent

Region	Agriculture	Mining	Manufacturing	Services	Total
Capital cities	0.6	0.6	11.5	87.3	100
Other metropolitan	0.8	1.3	10.2	87.7	100
Coastal	7.3	1.8	10.4	80.5	100
Inland	12.9	1.7	10.6	74.8	100
Remote	13.6	10.8	4.7	70.9	100
Australia	3.1	1.2	11.0	84.7	100

Source: ABS (2006a).

When analysing regional population changes it is useful to examine age distribution, to observe if there have been any new trends or significant changes. For example, population growth in coastal regions may in part be due to retirement decisions, which would be evidenced by an increasing proportion of older Australian living in those areas.

Table 5 provides the distribution of the Australian population by age and by region from 1991 to 2006. It shows that there have been some interesting changes in the age distribution by region. In 1991, 60.6 per cent of children aged 0-14 years lived in capital cities, but by 2006, this proportion had risen to 62.4 per cent. Similar increases are observed in other metropolitan areas, with minimal changes in coastal areas. Decreases in the percentage of children aged 0-14 years living in inland areas have occurred, from 15.5 per cent in 1991 to 13.6 per cent in 2006, with the percentage also falling in remote areas over this time period. A very similar pattern of regional changes can be seen for the 15-24 years age group, and also for the 25-54 years ('prime-age workers') age group. It is important to note that the decline in the prime-age group in inland regions is relatively large, falling from 13.4 per cent in 1991 to 11.7 per cent in 2006.

The changes in the age distribution of those aged over 54 years tells an interesting story. There has been a fall in the percentage living in capital cities and remote areas, little change in inland areas, and a rise in other metropolitan areas. However the greatest rise has been in coastal areas, increasing from 13 per cent to 14.1 per cent from 1991 to 2006, indicating that retiring to coastal areas has grown in popularity.

Table 5: Distribution of Population by Age and Region, 1991, 1996, 2001 and 2006, per cent

	0-14	15-24	25-54	Over 54
		1991		
Region				
Capital Cities	60.6	66.5	64.4	61.0
Other Metropolitan	8.1	8.2	8.2	9.7
Coastal	12.3	9.6	10.9	13.0
Inland	15.5	12.8	13.4	14.0
Remote	3.5	2.9	3.1	2.2
		1996		
Capital Cities	60.7	66.3	64.5	60.6
Other Metropolitan	8.4	8.9	8.7	9.8
Coastal	12.7	9.9	11.1	13.5
Inland	14.9	12.1	12.7	13.8
Remote	3.3	2.8	3.0	2.2
		2001		
Capital Cities	61.6	66.7	65.3	59.9
Other Metropolitan	9.0	9.0	8.9	10.5
Coastal	12.3	9.9	10.8	13.8
Inland	14.0	11.8	12.0	13.5
Remote	3.1	2.6	2.9	2.3
		2006		
Capital Cities	62.4	67.0	66.1	60.3
Other Metropolitan	9.2	9.4	9.1	10.1
Coastal	12.0	9.9	10.7	14.1
Inland	13.6	11.5	11.7	13.9
Remote	2.9	2.3	2.4	1.6

Source: ABS (1991, 1996, 2001, 2006a).

4. Interregional migration

So far, it has been shown that population and employment growth rates have been highest in capital cities, other metropolitan areas, and during the more recent boom years of 2001 to 2006, in coastal areas. Employment growth has occurred predominantly in the services and mining sectors. Inland areas, while experiencing population and employment growth rates below the national average, have experienced an increase in both rates between 1991 and 2006, with population growth rates accelerating between 2001 and 2006. Clearly the remote areas have not participated in the good fortunes of strong national economic growth, experiencing dramatic falls in both population and employment growth rates between 2001 and 2006.

In terms of understanding possible causes of population shifts and the implications for policy, it is essential to examine *net* migration, and to also determine where people are moving from and moving to. Table 6 shows net migration in absolute numbers and as a proportion of each region's population, between 1991 and 2006. These data were obtained from the ABS by observing the post-code addresses and regions of residents in the previous Census and comparing these with their region of address in the following Census.

From Table 6, it is clear to see that during the 2001 to 2006 period, far more people were leaving capital cities than were moving into them, with net migration of over minus 90 000 people – just under 1 per cent of the population living in capital cities. Positive net migration has occurred in other metropolitan areas and coastal areas over the entire period from 1991 to 2006. However, in percentage terms and absolute numbers, net migration for other metropolitan areas, while positive, was slowing down over this time period, while the rate of net migration in coastal areas increased significantly between 2001 and 2006. Importantly, while more people are still leaving inland areas than are moving into them, the rate of decline has slowed significantly. Between 1991 and 1996, inland areas experienced net migration of over minus 45 000, but by the 2001-2006 period, this was only 2518 people (0.1 per cent of the population). As a proportion of the population, remote areas have experienced the greatest losses of people through migration over the entire period under examination, rising from -6.2 per cent between 1991 and 1996 to -7.3 per cent between 2001 and 2006. There is no doubt that something dramatic has been

occurring in remote Australia, and to some extent, also in inland Australia. The significant positive net migration in coastal and other metropolitan areas also has important implications for policy and service provision.

Table 6: Net Migration, Australia, 1991-1996, 1996-2001 and 2001-2006

Region	1991-1996 Persons	Percentage of population	1996-2001 Persons	Percentage of population	2001-2006 Persons	Percentage of population
Capital Cities	-32 992	-0.3	2 814	0.02	-90 218	-0.8
Other Metropolitan	80 234	5.6	69 168	4.3	53 629	3.1
Coastal	29 053	1.5	23 651	1.1	67 280	2.9
Inland	-45 076	-1.9	-56 135	-2.4	-2 518	-0.1
Remote	-31 219	-6.2	-39 498	-7.6	-28 173	-6.4

Source: ABS unpublished data.

It is important to identify where people are moving from and to. Unpublished census data (unpublished for confidentiality requirements) has been generated for this study by the ABS, which is shown here in Tables 7a, 7b and 7c. The *columns* in Table 7 list where people are moving *from*, while the rows show where they are moving *to*. For example, from Table 7a, of all those people who left remote areas between 1991 and 1996, 47.7 per cent moved into capital cities, and of those who left inland areas, 58 per cent moved into capital cities. This is counter-intuitive to the commonly quoted idea that people leaving rural and remote areas initially move to a larger centre but not to capital cities, to reduce the dramatic change in lifestyle and amenity. However, the move directly to capital cities is likely to relate to the perception of relative job opportunities. Another perhaps surprising observation from Table 7a is that of all the people leaving capital cities, the largest proportion – 34.4 per cent – moved to inland areas. As employment growth was relatively low in these areas and unemployment rates higher than in capital cities (ABS 2006b), this suggests that the people who were leaving cities and moving to inland areas may have been doing so for lifestyle factors such as relatively cheaper accommodation, reduced pollution and congestion and a quieter lifestyle. Further, 9.5 per cent moved from a capital city to a remote area.

TABLE 7a: Migration: From and To Regions, 1991-1996, per cent

		From				
		Capital Cities	Other Metropolitan	Coastal	Inland	Remote
To	Capital Cities	-	53.6	47.6	58.0	47.7
	Other Metro	27.5	-	18.7	13.4	9.9
	Coastal	28.6	24.8	-	21.1	21.4
	Inland	34.4	16.0	23.4	-	21.0
	Remote	9.5	5.6	10.3	7.5	-

Source: ABS unpublished data.

Table 7b: Migration: From and To Regions, 1996-2001, per cent

		From				
		Capital Cities	Other Metropolitan	Coastal	Inland	Remote
To	Capital Cities	-	55.4	53.7	57.2	43.2
	Other Metro	26.7	-	20.9	13.3	10.9
	Coastal	35.3	25.5	-	23.8	25.4
	Inland	31.4	14.8	19.0	-	20.5
	Remote	6.6	4.3	6.4	5.7	-

Source: ABS unpublished data.

A similar pattern is evident during the 1996 to 2001 period – Table 7b – with the largest proportion of people who left other metropolitan, coastal, inland and remote areas moving into capital cities. This was followed by around one quarter of those leaving inland and remote areas moving to coastal areas. The picture has changed regarding the destinations of those who left capital cities, with the largest proportion moving to coastal areas instead of inland areas, although inland areas still received just under one-third of all those who left capital cities.

Looking at Table 7c for the period 2001 to 2006, some changing trends emerge. While capital cities are still the destination for the largest proportion of people leaving all other areas, the proportions have fallen from the previous census period, by an average of approximately 5 per cent. For example, between 1996 and 2001, 42.2 per cent of people who left remote areas moved to capital cities, but this had fallen to 38.8 per cent for the period 2001 to 2006. There has been quite a

significant increase in people leaving other metropolitan, inland and remote areas moving into coastal areas. To a lesser extent, there has also been an increase in those moving from coastal, inland and remote areas into other metropolitan areas. The proportion of people leaving other metropolitan and capital cities and moving into remote areas has fallen.

Table 7c: Migration: From and To Regions, 2001-2006, per cent

		From				
		Capital Cities	Other Metropolitan	Coastal	Inland	Remote
To	Capital Cities	-	53.1	50.1	53.4	39.2
	Other Metro	26.5	-	21.8	14.0	11.3
	Coastal	35.7	27.9	-	26.8	27.9
	Inland	31.8	15.0	21.5	-	21.6
	Remote	6.0	4.0	6.6	5.8	-

Source: ABS unpublished data.

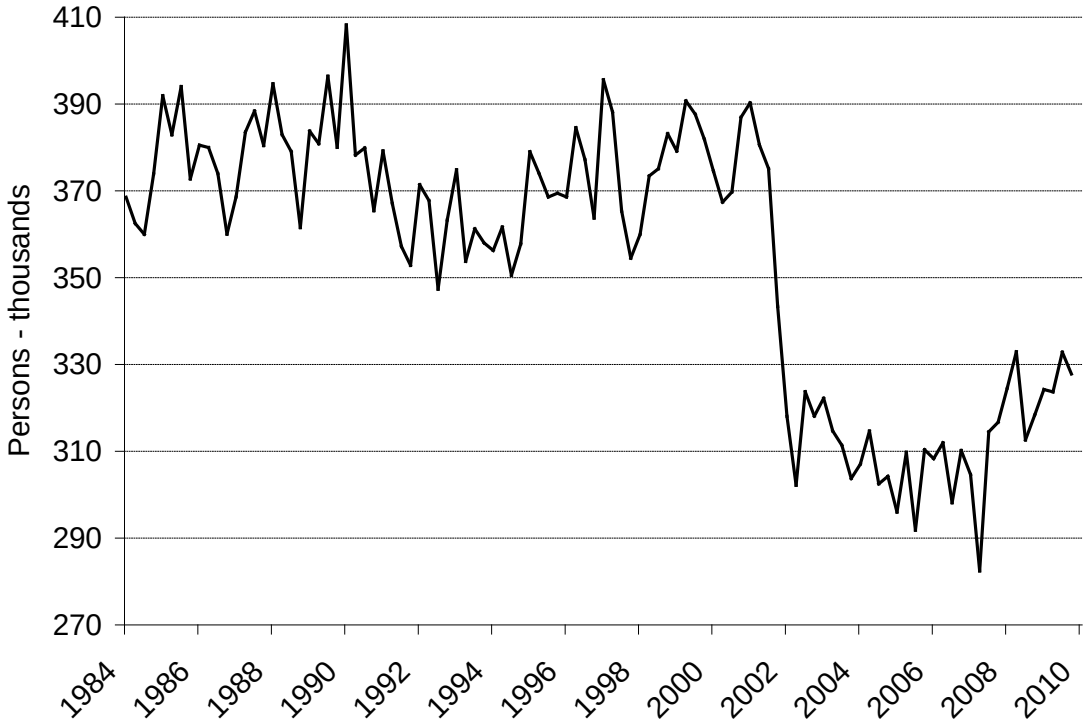
5. Reasons for the New Population and Employment Trends

The most dramatic trend in both population and employment over the three census periods has occurred in remote areas of Australia. As seen from Table 2 and Table 3, population and employment growth rates had declined to almost zero by 2001, but then moved into large negative growth rates by 2006. There is little doubt that the severe droughts experienced by agricultural areas within remote regions during these years had a significant impact on population and employment.

Figure 1 shows total employment in agriculture in Australia from 1984 to 2010. Fluctuations throughout the 1980s were followed by a downward trend in the early to mid-1990s, but this was followed by an upward trend during the second half of the 1990s. The severe drought experienced throughout Australia in 2002/03 had a dramatic effect on employment in agriculture, with employment falling by over 20 per cent between February 2002 and February 2003. This amounted to approximately 78 400 jobs lost directly in agriculture, with additional jobs amounting to around 1600 lost in services to agriculture (ABS 2010). Continual periods of drought throughout

the 2000s meant that employment remained at historic lows, falling even further – with the loss of an additional 11 000 jobs – following the 2006 drought.

Figure 1: Employment in Agriculture, Australia, 1984 to 2010



Source: ABS (2010).

Also seen in Figure 1 is the start of the upturn in employment in agriculture from 2008 onwards. According to many estimates, a significant labour *shortage* is emerging in rural Australia as it recovers from the drought. The National Farmers Federation (NFF) have estimated that the agricultural sector will have a labour shortages of at least 100 000 over the next few years (NFF 2008a; NFF 2008; NFF 2010a). As a specific example, in 2008, the horticultural industry reported a shortage of 22 000 fruit-picking jobs, with some farmers losing $250 000 worth of unpicked rotting fruit per season (NFF 2010a). A joint report by the NFF, the Department of Education, Employment and Workplace Relations (DEEWR) and the Minerals Council of Australia (2009) highlights current and predicted labour shortages in inland and remote areas in both the agricultural sector – which requires both skilled and general labour, and the mining sector – which is experiencing shortages in skilled labour. A recent major report investigating the proportions of tradespersons

throughout regions of Australia also identified shortages of skilled workers in rural areas, particularly a shortage of tradespersons, (Lewis and Corliss, 2010).

It is important to remember that the trend in employment in agriculture prior to the droughts was upwards in the second half of the 1990s, which was occurring at the same time as dramatic outward migration flows were experienced, as seen in Table 6. This indicates that the more traditional idea of a rural downturn leading to falls in job opportunities in agriculture, while obviously important, cannot be the only explanation for the population and employment changes experienced in inland and remote areas. The reports of post-drought labour shortages referred to above add weight to this idea. Further, rural Australia has long experienced particular types of labour shortages – even during the drought years – including not just fruit-pickers, but the on-going and chronic shortage of medical professionals, school teachers and tradespersons, (Garnett 2007; Lewis and Corliss, 2010, NFF 2006).

Variables such as relative wages, amenity (service, environmental, cultural), housing costs, age, education, industry mix and employment opportunities are frequently used to explain regional population movements, (Lewis 1990; Lawson and Dwyer 2002; Tokle and Huffman 1991).

Lawson and Dwyer (2002) attempted to quantify factors leading to employment growth and migration in regional Australia, using logit regression modelling, and found that out-migration was likely to be due to low access to markets, low regional amenity, high unemployment rates, and younger populations. Garnaut, Connell, Lindsay and Rodriguez (2001) conducted a descriptive small area analysis of population, employment and income trends in non-metropolitan Australia, and found that that the highest rates of in-migration occurred in rural areas that were surrounded by urban centres of more than 20 000 people. This, they argued, corresponded with greater employment opportunities due to diversified economies and higher levels of service amenity.

The idea of deteriorating service provision contributing to outward migration has been examined by a number of researchers. For example, studies by Beal and Ralston (1998) and Beal and Delpachitra (2005) focused on effects of the closure of bank branches in rural towns, with their findings showing that bank closures resulted in residents travelling to major centres for their financial needs, and while there, conducting their other business. The effect of this was to dramatically reduce local business sales, with possible business closures. Note that a subsequent study found

that although the effects of branch closures still existed, the growth in alternative delivery channels for financial services, such as the internet and EFTPOS, reduced the negative effects from this (Beal and Delpachitra 2005).

Other surveys on the effects of cuts in rural physical and social infrastructure, such as the downgrading of hospitals, have found significant results in terms of the negative impact on population, (Stayner, 1997; Kamien, 1998; Harrison, 1997). The difficulty in sourcing and retaining health professionals is borne out by Census data on the number of healthcare professionals across regions. The Department of Infrastructure, Transport, Regional Development and Local Government, using the ABS Remoteness Structure classification, showed that in 2006 there were 61 general practitioners per 100 000 people in very remote areas, which compares with 205 per 100 000 people in major cities. The proportions of registered nurses were 352 per 100 000 people in very remote areas compared with 642 in major cities, (Department of Infrastructure, Transport, Regional Development and Local Government, 2008).

The biggest gains in terms of net migration – occurring in all three census periods – has been in other metropolitan and coastal regions, with net migration to coastal areas accelerating in the most recent census period. The population shifts in part appear to be related to labour markets. It is the 'other metropolitan classification' that recorded the highest net migration and the highest employment growth rates between 1991 and 2006, with the highest employment growth rate – 15.5 per cent – occurring between 2001 and 2006. The booming economy is likely to have significantly stimulated jobs and the development of other metropolitan areas.

Coastal areas experienced the second highest rates of net migration, but also experienced below average employment growth between 1996 and 2001. However, by 2006, employment growth in coastal areas was the second highest in the country, at 13.3 per cent between 2001 and 2006. This suggests that a number of factors are in play. High net migration at the times of lower jobs growth suggests that factors such as amenity and lifestyle choices are important. The increase in the proportion of older people in coastal areas supports this idea. Further, a recent econometric study suggested that there was a tendency for unemployed people to move to coastal areas, again lending support to the lifestyle and amenity explanations for regional migration (Garnett 2007). It is likely, however, that the recent surge in net migration to coastal areas is in part due to labour market factors. The minerals boom has led to growth in

employment in a number of coastal areas including some major developments in coastal New South Wales and Western Australia.

Another population and migration issue to address is the relatively large proportion of people who left capital cities and moved into inland regions. During every census period, over 30 per cent of those leaving capital cities moved to inland areas, and over 6 per cent moved to remote areas. Seeking a change in lifestyle is one likely explanation, sometimes referred to as the 'tree-change' (Garnett and Lewis, 2007). Another explanation involves welfare-led migration, which is the suggestion that as real-estate becomes increasingly expensive in capital cities and other urban areas, people move to inland and remote areas where housing is significantly more affordable. The analysis of a longitudinal data set by Dockery (2000) provides evidence that housing affordability is a factor in inter-regional migration.

6. Summary and policy implications

There have been considerable population and employment changes in many parts of Australia in recent years. Some of the classification methods often used to define regions in Australia have meant that certain trends and changes in population and employment have not been clearly evident. When a more appropriate classification is applied, which includes both coastal and remote classifications, noticeable changes emerge.

It has been shown here that since 1991, substantial numbers of people have been leaving inland and remote areas of Australia. This translates into a significant proportion of some towns. The outward migration from inland areas slowed in the most recent census period, however, outward migration from remote areas continued to be significant. The largest proportion of outward movement from inland and remote areas has been into capital cities, followed by coastal areas. Between 1991 and 2006, the highest total numbers of positive net migration have been in other metropolitan and coastal areas.

The significant negative population and employment growth rates, together with negative net migration, experienced in remote areas of Australia between 2001 and 2006 has clearly been in part caused by severe droughts. However, it is not just the droughts that have been responsible for these declining figures, as negative net migration have been recorded in inland and remote areas in all Censuses since 1991.

Lack of services and amenities have been identified here as important variables, with persistent labour shortages such as shortages in medical and education professionals, tradespersons and general labour, likely to contribute to the downward population and employment spiral in some areas. This presents enormous policy challenges, with organisations including the NFF, DEEWR and the Minerals Council suggesting policies such as differing tax treatment for some areas, new education and training schemes, and significant improvements in amenities (NFF 2010b; NFF, DEEWR, and Minerals Council of Australia 2009). A seasonal migration schemes such as the Recognised Seasonal Employer (RSE) policy which exists in New Zealand, has been put forward as a possible solution to seasonal labour shortages in agricultural areas (Garnett 2007; ILO 2008; NFF 2006). Changes to long-stay visas for skilled workers have also been suggested (NNF 2008b).

The large positive net migration experienced by other metropolitan and coastal areas lead to important policy implications for infrastructure, services and housing. Between 2001 and 2006, positive net migration was largest in coastal areas, with growth in employment opportunities, and amenity and lifestyle choices the likely explanatory factors. During this period the proportion of older people living in coastal areas also increased noticeably, lending support to lifestyle reasons. Non-labour market explanations would also explain the small but interesting outward migration from capital cities to inland and remote areas. Differences in housing affordability has also been put forward a contributing factor to this outward migration.

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