Australian Government

Bureau of Rural Sciences

COUNTRY MATTERS

2008 SOCIAL ATLAS OF RURAL AND REGIONAL AUSTRALIA

DROUGHT

DEPARTMENT OF AGRICULTURE, FISHERIES AND FORESTRY

Drought in rural Australia — exploring the social impact in three case study regions

For more information

The 2008 Country Matters: Social Atlas of Rural and Regional Australia is an online tool available at www.brs.gov.au/socialatlas. The Atlas enables you to create and download a customised regional profile containing key social and economic information for any region.

The Atlas has five companion booklets that provide a summary of the Atlas and detailed analyses on four social themes:

- 2008 Country Matters:
  Social Atlas of Rural and Regional Australia — Summary Booklet
- Education and training in rural and regional Australia — people in country areas rising to the challenge
- Changing employment in industries in rural and regional Australia
- Social fabric of rural and regional Australia
- Drought in rural Australia — exploring the social impact in three case study regions.

How do I get a copy?

These booklets and a copy of the Atlas are available for download from the Bureau of Rural Sciences shop at www.brs.gov.au/shop.

Introduction

The *2008 Country Matters: Social Atlas of Rural and Regional Australia* (the Atlas) includes information from the Australian Bureau of Statistics (ABS) 2001 and 2006 *Census of population and housing*. These data provide information on many critical social and economic issues affecting rural and regional people, communities and industries. This thematic study uses information from the Atlas to highlight the social impacts of prolonged drought in three case study regions in Australia — central coastal Queensland, the Riverina New South Wales and southwest Western Australia.

Box 1 shows definitions of important terms used in this document, based on the terminology used in the Atlas.

Box 1
Terms used

- Major urban centres — population clusters of 100 000 people or more, including capital cities.
- Regional centres — population clusters of 1000 to 100 000 people.
- Small towns — population clusters of 200 to 1000 people.
- Rural areas — less than 200 people.
- Country — includes all the areas outside the capital cities.
- Statistical local area — fundamentally, SLAs are local government areas.
- Place of usual residence — the data are based on the person's place of usual residence on Census night. This means that some people could live in rural areas, but work in a small town or regional centre, explaining why there are numbers of people working in retail, health, manufacturing and government services in rural areas.

Drought in Australia

Australia is the driest inhabited continent on earth — drought has always been a part of the landscape. Drought can be defined in different ways: meteorologists are interested in the degree of dryness and the duration of dry periods, hydrologists focus on the effects of precipitation on ground and surface water supplies, and social and economic scientists are interested in the impacts on people, communities, local economies and farm and rural businesses (Botterill and Fisher 2003, Lindesay 2003).

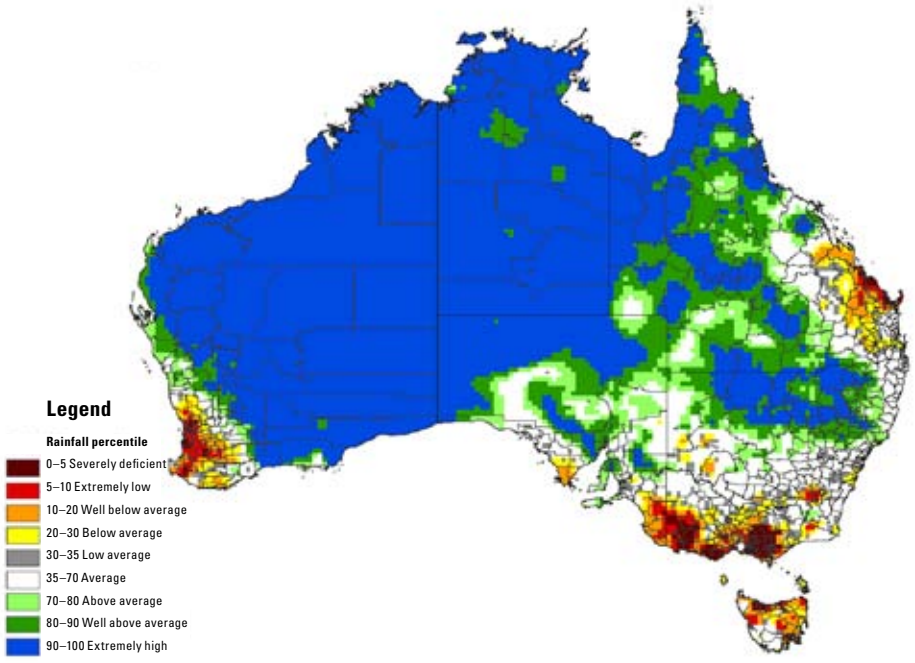
Within this document, the definition of drought is based on rainfall received since 1997, and expressed in the maps below as percentile ranges. The percentile is the value below which a certain observation falls, for example, the twentieth percentile is the value below which 20% of the observations may be found.

Since the 1990s, drought conditions in Australia have occurred frequently and have been prolonged, pervasive and severe. In times of drought, agriculture tends to suffer quickly and severely, meaning that people and communities in rural and regional Australia are most affected. Drought disrupts cropping programs, reduces breeding stock numbers and results in declining productivity, which affects small towns and regional centres in rural Australia and the national economy. As drought conditions become more severe, the risk of environmental damage increases (including vegetation loss, soil erosion, negative effects of bushfire and reduced water quality). This ultimately affects the long-term sustainability of agricultural industries, country areas and families.

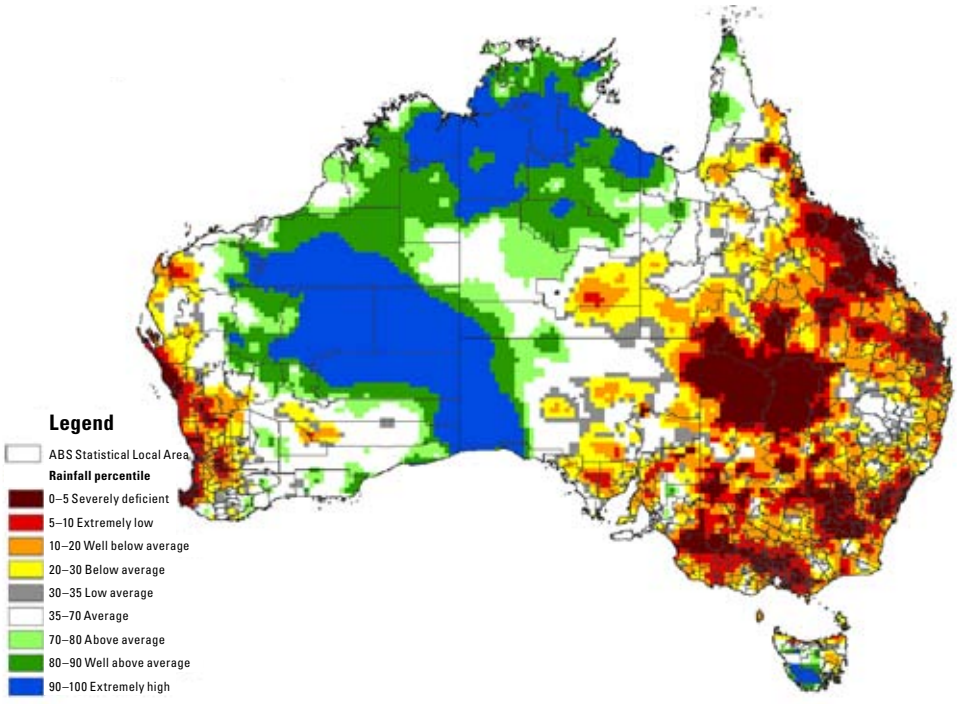
Farmers, communities and industries experience drought differently. The experience is influenced by a variety of factors, such as life stage, gender, education, social cohesion, commodity prices, level of debt, income, family commitments and geographic location (Alston and Kent 2004, Stehlik et al 1999, Stehlik 2003).

Nevertheless, there has been a fundamental shift in attitudes towards drought and drought management. There is a sense of urgency to develop new ways of coping and new techniques to prepare for the future drought conditions.

Severe drought conditions occurred from 1994 to 1997 and from 2002 to 2008. This current drought is considered to be one of the most severe droughts of the past 100 years. Map 1 presents the average annual rainfall (in percentiles) for the five-year period before the 2001 Census. The percentiles describe rainfall ranging from severely deficient to extremely high. Most of Australia had average or above-average rainfall during this five-year period, but some regions in central coastal Queensland, southern New South Wales, parts of Tasmania and southern Western Australia had rainfall that was well below average.

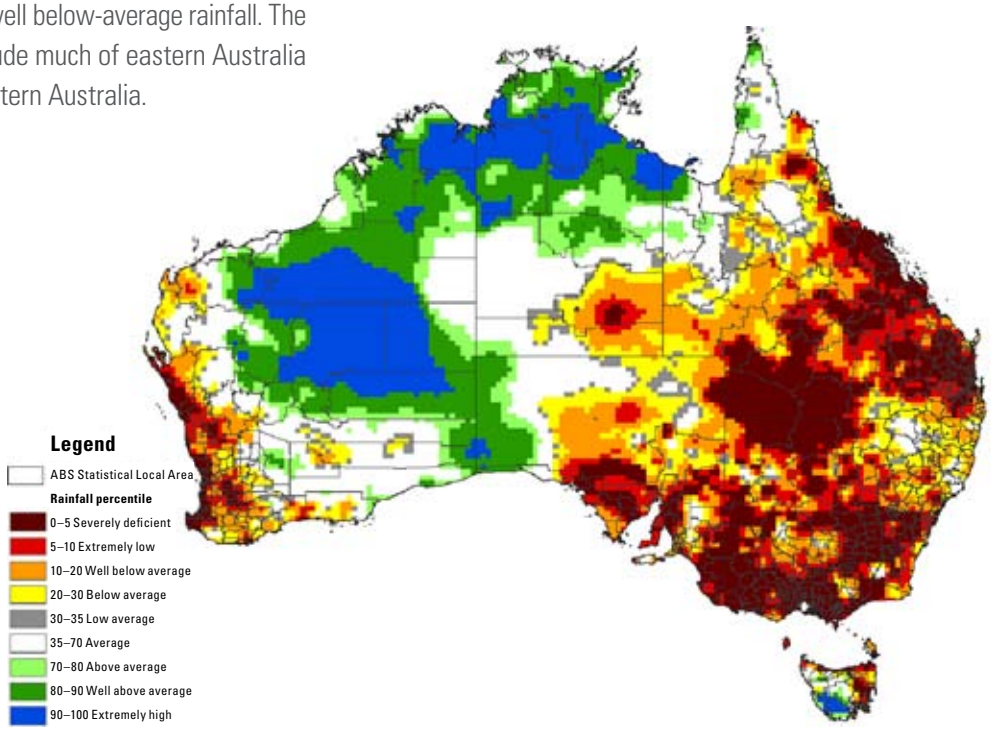


Map 1 Percentiles of Annual Rainfall Totals January 1997 — December 2001



Map 2 Amount of annual rainfall, 2001–06

Map 2 shows the annual average rainfall (in percentiles) for the five years from the 2001 Census to the 2006 Census (September 2001 to August 2006). This period is included in the current drought and Map 2 compared with Map 1 shows many more statistical local areas (SLAs) with below-average and well below-average rainfall. The most affected areas include much of eastern Australia and coastal areas of Western Australia.



Map 3 Amount of annual rainfall, 2002–06

Map 3 shows the annual average rainfall (in percentiles) for January 2002 to December 2006, which includes the last four months of 2006 that were not included in Map 2. This map shows that drought conditions became more severe during that time, with even more regions experiencing rainfall that was well below average.

These three maps clearly show that some areas of Australia have been experiencing drought conditions since 1997.

As well as prolonged periods of severe drought, many farmers have also experienced low prices and declining returns, high interest rates, and increasing debt and costs (Stehlik et al 1999). The combined influence of these factors has probably greatly exacerbated existing trends in rural and regional decline, leading to closure of small businesses, general loss of population (particularly young people and families) and decline in community spirit and social fabric (see the thematic document *Social fabric of rural and regional Australia*).

Maintaining the characteristics and functioning of communities is central to the survival of rural towns. An important part of this is being able to understand the impact of drought on rural communities, including how communities are coping. Under prolonged drought conditions, the maintenance of community support structures becomes uncertain. Social networks can become strained and people are not necessarily brought together to share support. In addition, the longer the duration of drought conditions, the greater the drain on economic and social resources needed for communities to recover.

The impact of drought is likely to be greater in small towns (Alston and Kent 2004). Small towns are less resilient to shocks due to smaller economies and a lack of large corporate resources and support mechanisms. For example, loss of farm expenditure tends to affect whole communities and nearly all sectors of the local economy (Alston and Kent 2004).

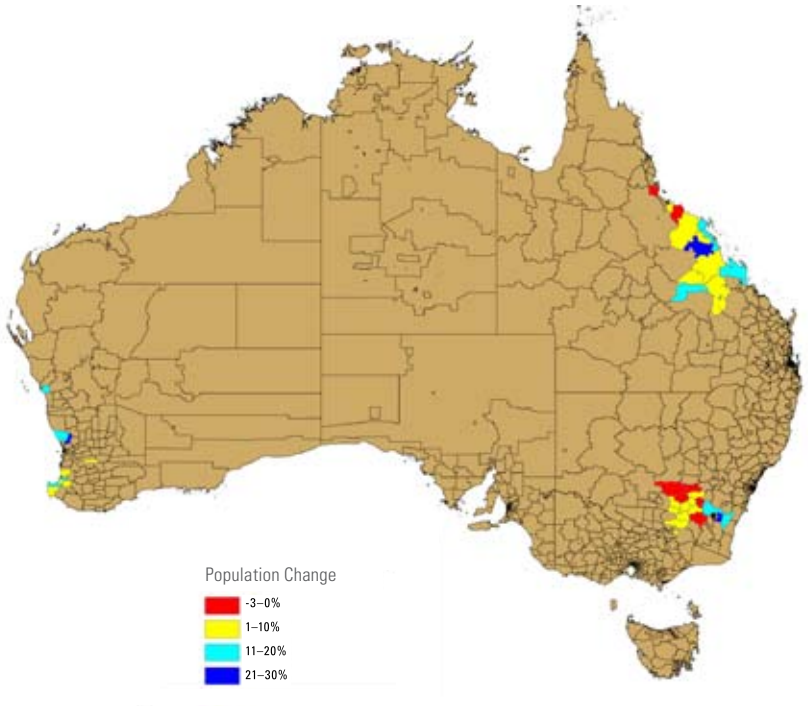
A small number of studies have investigated the impacts of drought on rural and regional areas (Stehlik et al 1999, Stehlik 2003, Alston and Kent 2004, DOTaRS and CREEDA Projects 2005, Western Research Institute 2006). Some of the key findings include:

- exacerbated population loss due to migration away from rural and regional areas, especially young people, and subsequent loss of skills
- changed family work-life conditions due to women working off-farm to supplement farm income
- increased family workloads because of an inability to afford paid labour
- loss of community networks, with families having less social interaction
- a need for greater financial support requiring gender roles to change, such as women working both on and off-farm
- increased health problems, such as stress and depression, feelings of loss of control, and low self esteem
- loss of financial capacity and income, which challenges the viability of farms and small businesses
- loss of skills and jobs, including casual and itinerant work
- loss of local knowledge and experience, with skilled people accepting work elsewhere
- minimal support for young people to take over farms
- lack of employment opportunities for older people, but increased pressure and workload
- downturn and closure of small businesses, particularly rural support businesses that rely on agriculture.

These findings have guided the analyses of social data in the following three case study regions:

- the central coast in Queensland
- the Riverina in New South Wales
- southwest Western Australia.

These case studies are described in the next section.



Map 4 Location and population change in the statistical local areas of the case study areas, 2001–06

Case study regions in prolonged drought

The case study regions were selected because they have been severely affected by prolonged drought. Map 4 shows the locations of the three case study regions in Australia and the population change in each of the SLAs between 2001 and 2006. Further information on the population change in the three case study areas is given in the next section.

Central coastal Queensland

This case study region includes the SLAs of Fitzroy, Duaringa, Emerald, Livingstone, Peak Downs, Bowen, Broadsound, around Mackay, Mirani, Nebo, Sarina, Whitsunday, Burdekin, Hinchinbrook and around Townsville. The combined population of the area was 154 600 people in 2006. Within the region, there are the regional centres of Townsville and Mackay, and a number of smaller urban centres and towns, such as Emerald, Ingham, Ayr, Bowen, Sarina, Nebo, Mirani, Proserpine, Capella, Duaringa, Blackwater and Yeppoon.

Riverina in New South Wales

The Riverina case study area includes the SLAs of Bland, Weddin, Palerang (Part A and B), Harden, Yass Valley, Young, Wagga Wagga, Coolamon, Cootamundra, Gundagai, Junee, Temora, Tumut, Greater Hume and Towong. The combined population of this region was 153 900 people in 2006. The region contains the regional centres of Wagga Wagga, Yass and a number of smaller urban centres and towns, such as Holbrook, Corryong, Tumut and Temora.

Southwest Western Australia

The southwest Western Australia case study region includes the SLAs of Capel, Dardanup, Donnybrook-Balingup, Harvey, Augusta-Margaret River, Busselton, Pingelly, Chittering, Gingin and Greenough. The total population of the region was 65 700 people in 2006. Within the area is the regional centre of Busselton and smaller urban centres such as Margaret River, Harvey, Donnybrook and a number of small towns such as Balingup, Augusta, Capel, Pingelly and Gingin.

Case study themes

The main themes explored across the case study regions are:

- population change
- declining employment in agriculture, fisheries and forestry
- industry diversification
- human capital
- changing families
- community participation.

A changing population

Although some previous research has found that drought exacerbates population decline in country areas, Map 4 shows that none of the SLAs in Western Australia experienced population decline over the study period and low levels of population decline only in some of parts of the other two case study areas:

- central coastal Queensland — Burdekin (2.9% decrease) and Hinchinbrook (1.9% decrease)
- Riverina — Bland (1.6% decrease), Harden (1.5% decrease), Temora (1.2% decrease), Weddin (0.7% decrease) and Tumut (0.2% decrease).

Map 4 also shows that high population growth (greater than 11.0%) occurred in many parts of the three case study areas:

- central coastal Queensland — Nebo (24.1% increase), Fitzroy (17.3% increase), Emerald (16.7% increase), Whitsunday (15.6% increase), Sarina (15.4% increase), around Mackay (Mackay City Part B) (12.7% increase) and Livingstone (11.1% increase)
- Riverina — Palerang Part A (27.8% increase), Palerang Part B (16.1% increase) and Yass (11.1% increase)
- southwest Western Australia — Chittering (27.7% increase), Gingin (12.0% increase), Greenough (13.5% increase) and Busselton (18.9% increase).

Overall, the population in all three drought-affected case study areas increased in the five years to 2006 (9.2% in Queensland, 6.5% in the Riverina and 13.4% in Western Australia). The growth in central Queensland and southwest Western Australia was significantly higher than the national average of 6.6%, and the non-capital city average of 6.9%. In the Riverina, it was slightly lower.

However, the structure of the population changed considerably. In particular, the percentage of the population aged 75 years and over in the three case study regions grew by 23.6% in central Queensland, 20.6% in the Riverina and 32.1% in southwest Western Australia. These growth rates are significantly higher than the national average of 17.7% for this segment of the population. Changes were not consistent within each of the regions; for example, in the SLAs of Chittering, Gingin and Busselton in Western Australia, the 75 years and older population grew at 68.7%, 48.8% and 41.7%, respectively.

The median age of the populations in the case study areas increased by 2.2 years, 4.0 years and 2.5 years. The greatest increases in the median age of the populations occurred in Pingelly (4.7 years) in Western Australia, in Temora (3.7 years) and Greater Hume (3.5 years) in the Riverina, and in Burdekin (4.1 years) and Hinchinbrook (3.8 years) in central Queensland. Population ageing in the three case study areas was also indicated by growth in adults in the older range of the working age population (45–64 years): 21.6% in Queensland, 15.5% in the Riverina and 29.7% in Western Australia. These growth rates were the same as, or higher than, the national average of 15.7%. This indicates there is a greater reliance on older people to provide the productive capacity in these regions.

In addition, the number of one-person households increased in the case study regions by 5.2% in Queensland, 11.2% in the Riverina and 14.0% in Western Australia (the latter two were higher than the average for non-capital city areas of 8.1%, and the capital city

average of 7.5%). These households may have been created when a partner died, or because of partnership and family breakdown due to pressures caused by prolonged drought. Similarly, there was an increase in one-parent families in the case study areas in the Riverina (9.2%), Western Australia (4.2%) and Queensland (2.8%), compared with the non-capital city average (4.8%) and the capital city average (6.1%).

Young people (15–24 years) have been moving away from rural areas for several decades, regardless of drought conditions. Across all rural areas in Australia the number of young people decreased by 2.5%, but increased by 4.2% in small towns and by 5.5% in regional centres. The three case study areas were expected to have a higher-than-average decline in this segment of the population; however, decline in the number of young people varied considerably within each of the regions. For example, young people as a percentage of the population grew by 8.3% across the Riverina area and by 8.7% across the Western Australia case study area (both higher than the national average growth of 6.4%). This percentage declined sharply in some rural areas within the case study areas such as Pingelly in Western Australia (17.3%) and the SLAs of Burdekin (19.8%) and Hinchinbrook (9.0%) in central Queensland, and Palerang Part B (7.8%) in the Riverina. High growth rates of the number of young people occurred in Chittering (26.3%), Gingin (21.2%) and Busselton (15.4%) in southwest Western Australia; Nebo (41.5%), Fitzroy (28.0%) and Whitsunday (23.7%) in central Queensland; and Palerang Part A (51.4%) and Towong (23.6%) in the Riverina.

An analysis, using Census data, of the movement of people from drought-affected areas suggested that they moved to places providing services and opportunities appropriate for their age and circumstances. A major impact of younger adults and families moving out of an area is the acceleration of the age profile of the population that remains. When they move, older people mostly go to small towns in the same region. Young families and young people move to larger regional centres and cities. Although a number of older people move to coastal areas for retirement, the most important finding is that most older people do not move a great distance, but remain within the district.

What might an ageing population mean for these case study areas into the future? There will be strong demand for services and facilities to cater for the ageing population. The supply of labour will decline and the age of the labour force will increase. If drought becomes more frequent and of longer duration, as some climate change predictions suggest, older people could be vulnerable to heat stress and related health concerns. This is likely to put greater pressures on the working population and have an impact on health services, housing, and the capacity for people to contribute to community life.

Declining employment in agriculture, fisheries and forestry

Perhaps the biggest change in the three case study areas attributable to the severe drought was the decline in employment in agriculture, fisheries and forestry from 2001 to 2006. While the total number of people employed in all industries in each of the regions increased from 10.7% to 19.0%, those employed in agriculture decreased in the case study regions by 20.6% in central Queensland, 8.8% in the Riverina and 7.8% in southwest Western Australia. At the end of the five-year period to 2006, agriculture was no longer the biggest employment sector in each of the three case study areas; the new major employer was retail.

These data indicate that people living in these areas were changing their work practices and making the shift to other sectors. As an example, employment in the mining sector in the Queensland case study area increased by 66.5%; in Emerald, employment in agriculture decreased by 30.5% and employment in mining increased by 76.2% over the five-year study period. Duaringa and Broadsound experienced similar shifts in employment from agriculture to mining. In the Riverina and Western Australia case study areas, there was a shift in employment to the retail sector, which became the biggest employer in those regions. Figure 1 shows the percentage change in employment from 2001 to 2006.

Figure 1 shows that employment fell in agriculture (in all case study areas) and in culture and recreation (in the study areas in central Queensland and southwest Western Australia), but increased in other industries, especially in mining, construction and government-related employment. (Note: the increase in mining in the Riverina and Western Australia study areas was from a low base.)

The decrease in employment in agriculture during the five years to 2006 was consistent across the three regions — only two out of 55 SLAs showed an increase (Greater Hume in the Riverina by 10.8% and Gingin in Western Australia by 10.4%).

What is the significance of employment changes for these drought-affected regions? The lower numbers of people employed in agriculture suggest that many farmers have been unable to afford additional labour; one strategy to manage in drought conditions is to reduce the number of employees, many of whom live in small towns. In addition, there has been a long-term decline in agricultural employment, which the drought may have exacerbated.

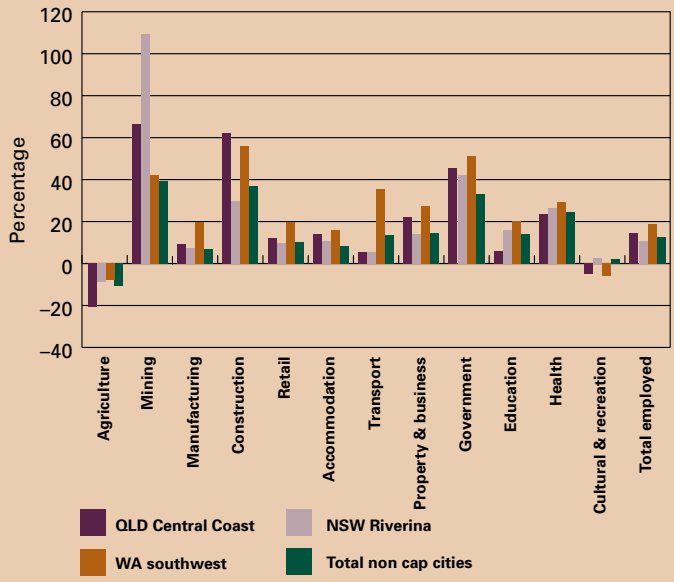


Figure 1 Change in number of people employed, 2001–06

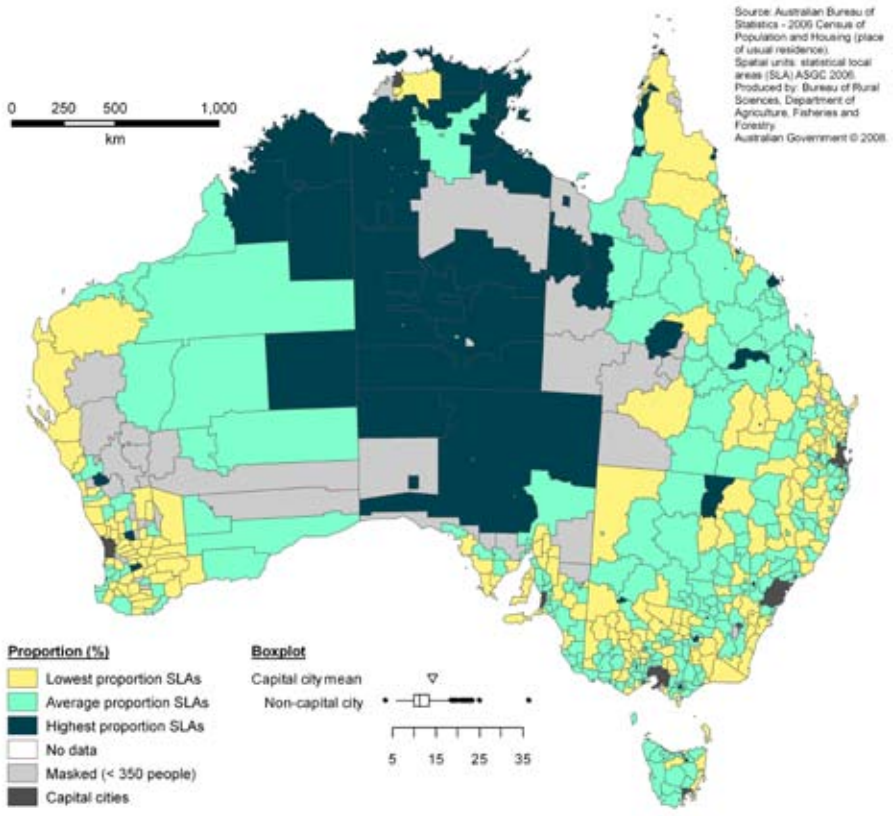
During the five-year period to 2006, other sectors have been able to absorb the surplus employment. In some areas, such as Queensland and Western Australia, a resource boom has attracted people to the mining sector due to high wages. A challenge for these regions over the next few years, as they move into drought recovery, will be to attract people back to work in the agricultural sector. Over the past few years, many farmers have increased their debt and have not been able to compete with the higher wages and attractive conditions offered by mining and other industries. In agriculture, this will mean an even greater emphasis on productivity and the uptake of new technologies. It may also hasten the change to larger farms with lower levels of employment, and the use of seasonal and contract labour.

Industry diversification and building resilience to drought

The top three industries as a proportion of total employment are an indication of the concentration of employment in a region. Greater diversity can signal a general resilience to changing conditions, or the capacity to manage change such as drought. Generally, non-capital city areas had about the same average levels of concentration of employment as capital city areas (36.0% and 37.8%, respectively), but in very different industries. However, over the five years to 2006, the non-capital city areas only reduced concentration levels by 0.1%, in contrast to the capital cities, which reduced concentration levels by 2.5% (and hence became more diverse).

In each of the three study areas, the level of employment concentrated in the top three industries decreased from 2001 to 2006: in central Queensland by 2.9% to 43.7%, in the Riverina by 1.6% to 37.3%, and in southwest Western Australia by 2.7% to 38.5%. This reflects, in part, some diversification of employment, but also the overall decline in employment in agriculture. The SLAs in the case study areas with the greatest increases in industry diversity were in Mirani (10.5%) and around Mackay (9.3%) in Queensland, Bland (6.5%) in the Riverina, and Donnybrook (5.4%) in Western Australia.

Another indicator of a region's diversification in industry is the change in employment in new industries. New industries were represented by the cultural and recreation industry, property and business, and accommodation and cafes (tourism-related) categories.



Map 5 Change in employment in the accommodation and cafes sector

For the three case study regions, there was employment growth in these new industries of:

- 15.6% in central coastal Queensland
- 11.4% in the Riverina New South Wales
- 18.5% in southwest Western Australia.

This rate of change was higher than the increase in the non-capital city average of 10.6% and the capital city average of 3.8%. The higher levels of employment in new industries in the two coastal areas (Queensland and Western Australia) are largely explained by investment in the accommodation and cafes sector, which represents growth in tourism. For example, this sector grew in the case study areas by 15.9% in southwest Western Australia (26.3% in the Busselton SLA) and 14.0% in central Queensland (22.4% in the SLAs of Bowen and 12.0% Whitsunday) and 14.8% in Wagga in the Riverina. The growth in the accommodation and cafes sector in coastal and some 'tree change' regions is evident in Map 5.

There are signs that the diversification of the economic base, as evident through reduced employment concentration and increased investment in new industries, will help these regions manage drought into the future. It appears that the coastal geographic location provides more opportunities for a wider range of employment in different industries.

Human capital — skills and education

All employers, industries and businesses in country Australia need an ongoing supply of skilled labour to manage an evolving labour market to meet increased productivity demands. In addition, people need to have the necessary skills and education to be able to participate in society and to maintain quality of life and avoid social exclusion. Some earlier research (for example, Alston and Kent 2004) has suggested that, in times of drought, people with good (post-secondary school) skills and education leave country areas — human capital is lost.

The three drought-affected case study areas did not lose human capital during the study period. There was an increase in the number of people with both tertiary (Queensland 28.8%; Riverina 30.6%; Western Australia 37.1%) and vocational qualifications (Queensland 30.4%; Riverina 24.4%; Western Australia 29.5%). This increase was generally on par with, or higher than, the average in non-capital city areas (31.6% for tertiary qualifications), and generally higher than the national average increase of 24.6% for vocational qualifications.

Decreases in the number of people who *do not* have post-school qualifications are a major indicator of increasing life-long learning to improve opportunities in the workforce and to improve productivity. Generally, the non-capital city average did not quite match the improvement in capital cities, with a decrease of 3.2%, compared to the larger decrease in capital cities (5.8%).

In the case study areas, lower levels of life-long learning were evident in central Queensland (by 2.4%) and the Riverina (by 3.0%), and the number of people with post-secondary school qualifications decreased in southwest Western Australia (by 3.2%). However, this trend was not consistent within the case study regions. For example, the Queensland case study saw a decrease (2.4%) in the number of people without a post-school qualification, but seven of the SLAs (Fitzroy, Emerald, Peak Downs, Mackay, Sarina, Nebo and Whitsunday) showed increases in the number of people who *do not* have post-secondary school qualifications. In these areas there were decreases in the level of post-secondary school qualifications in 2006. This was similar in the Riverina (overall decrease in people *without* post-secondary school qualifications of 3.0%) with wide variations across the SLA within the region. In the Western Australian case study, there was an increase (3.2%) in the number of people *without* post-secondary school qualifications but with falls in levels of post-secondary school qualifications in SLAs such as Chittering and Busselton having the largest increases (15.7% and 8.7% respectively).

When looking to the future, the numbers of 16-year-olds in full-time education provides an indication of a region's access to potential skilled labour and signals young people's ability to make a smooth transition to the workforce. In capital cities, the number of 16-year-olds remaining at school increased by 2.8%; this rate was slightly less across all non-capital city areas (2.0%), partly due to the overall declining population. In the case study areas, large improvements in retention rates were recorded in southwest Western Australia (9.2%) and small improvements in the Riverina (0.9%), but in central Queensland, the number of young people remaining at school declined by 6.5%, with some areas decreasing by more than 25.0% (in the SLAs of Fitzroy, Peak Downs, Mirani and Burdekin). Similar to qualification levels, there were wide variations both between the case study areas and between the SLAs within them.

Human capital is vital in regions facing drought; without it, communities and industries have less capacity to adapt and bring about innovative change. These results suggest that there is considerable variation within regions, which may mean that in the future some localities will be able to adapt to drought better than others. This highlights the need to extend and improve access to education services to encourage young people to remain at school and to extend the opportunities to increase life-long learning and skills development. This could help address inequities associated with access and opportunity within regions.

Changing family conditions

The challenges of managing drought undoubtedly place families under stress, leading to changes in daily life and family conditions. Women with dependent children may need to work on or off-farm to supplement household income or to replace farm labour; women may delay having children; or families may disintegrate. Although drought is not the only cause of these types of changes, the stress caused by prolonged drought conditions will exacerbate existing financial and personal problems, and there will be increased pressure for women in particular to earn off-farm income for the family.

Women, including mothers with young children, are increasingly entering the workforce. In the five-year period to 2006, there was an increase in the number

of mothers employed full-time in the workforce, with the total number increasing from 191 000 to 530 000 (with an average across the non-capital city regions of Australia, 4.9%). This increase was higher than in capital cities (an increase of only 3.4%). In all three case study areas during the five-year period 2001 to 2006, there was an increase in mothers in the workforce: 5.5% in central Queensland, 4.8% in the Riverina and 3.7% in southwest Western Australia. While the amount of the increase varied between the SLAs, there were only three exceptions to the increase; Greenough, Dardanup and Pingelly, all in Western Australia; each had a reduction in the number of working mothers (of 6.5%, 4.2% and 1.6% respectively).

There was also considerable change in the types of families living in the three case study regions. For example, the percentage of one-parent households increased in all three case study areas during the five-year period — by 2.8% in Queensland, 9.2% in the Riverina and 4.5% in Western Australia. This may be partly caused by the pressure of prolonged drought on families. In the Queensland study area in 2006, 8.5% of family households were one-parent families with dependents; these made up 10.4% of family households in the Riverina case study area and 9.5% in the Western Australia case study area.

Correspondingly, the number of DINK households increased by 5.1% in the central Queensland area, 3.1% in the Riverina and 4.2% in the southwest Western Australian study area. The larger proportion of DINK households in the Queensland and Western Australia coastal zones may, in part, reflect the work, lifestyle and recreational opportunities available in industries other than agriculture. Changes in the percentage of couples with dependent children varied across the three case study areas; there was a decrease of 2.1% in Queensland and 1.8% in the Riverina, but an increase in Western Australia of 4.4% (compared with the non-capital city average decrease of 0.9%).

These variations in family conditions suggest that all three case study areas have undergone considerable change. In most instances, changes have been in excess of averages for other rural and small town locations. Although these changes may represent broader level social change, it is clear that these three drought-affected regions have been more severely impacted than other areas throughout Australia.

The main findings of the three case study areas are shown in Box 2.

Box 2
Main findings in the three case study areas

- Population increases in many SLAs more than offset population decline in others.
- The ageing population profile has led to an increasing reliance on older people for employment and maintenance of many community services.
- One-parent and one-person households are becoming more prevalent.
- People are moving — younger people and families to places that have education and other employment opportunities, and older people to nearby locations with health services.
- Prolonged drought has contributed to the decline of employment in the agriculture, fisheries and forestry, and people have sought employment in industries such as mining.

Community participation

Previous research (for example Stehlik 2003) has indicated that, in times of drought, people decrease their social interaction. Sometimes, individuals and families under stress retreat within themselves and can become isolated. Indeed, a major risk of a prolonged drought could be that maintaining community support is uncertain. One of the reported impacts of drought is the strain on a community's social fabric through, for example, the loss of community networks. Reasons for this often include reduced income levels, higher depression rates and a need to work in on-farm activities due to reduced farm labour.

The provision of services and community facilities is highly dependent on volunteer contributions in small towns and rural areas (for example, emergency services). Unfortunately, data on volunteering activities were not collected for the 2001 Census, so it is not possible to report change in volunteering activity for the three regions in the five-year period to 2006 using Census data. Voluntary work is defined as any unpaid work done by people over the age of 15 years, including help willingly given in the form of time, service or skills to a club, organisation or association.

In the three case study areas in 2006, volunteering rates were similar to the non-capital city average of 21.4%:

- 20.4% in central Queensland, with the highest levels in Peak Downs (26.8%) and Hinchinbrook (24.2%)
- 25.8% in the Riverina, with the highest levels in Towong, Palerang, Coolamon, Temora, Greater Hume and Weddin (all over 30.0%)
- 23.5% in southwest Western Australia, with the highest level in Pingelly (32.0%).

Conclusions

The pressures of drought can result in family stress, family breakdown, changes to family structure, loss of employment, changes in employment, and a decrease in social inclusion. The case study areas in central coastal Queensland, the Riverina in New South Wales and southwest Western Australia have faced considerable changes during 2001 to 2006 — social pressure from changes in employment, population and family structure, and the availability of human capital. Although it is not possible to demonstrate a causal link between demographic change and drought in these areas using these data, such change has been more pronounced than that in other similar regions.

When examining the impact of drought on country Australia, data on health, both physical and mental, should be included. These kinds of data are not collected for the Census — non-Census data should be collected and further research done to provide a more detailed analysis of the impact of drought. The pressures that families, farmers, rural people, communities and small towns face during drought must be understood so that appropriate support mechanisms, policies, programs and education can be provided in future drought periods.

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