



Australian Social Trends

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Article: Towns of the mineral boom

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Towns of the mineral boom

On census night 2006, numerous regional and remote mining towns accommodated substantial numbers of 'drive-in/drive-out' and 'fly-in/fly-out' workers, with implications for the planning and provision of goods, services and infrastructure such as housing, water and sewerage.

Rising demand and prices for many minerals has breathed new life into some regional and remote towns. In recent years, some towns have experienced relatively rapid growth because of strong demand for labour by the mining industry, accompanied by its ability to pay comparatively high wages.

The need for workers and accommodation in some regional and remote mining towns has led to increased incomes, property values, rents and people, though not necessarily a commensurate increase in the number who consider the town to be where they live. Flexible working practices such as extended shift rosters and greater provision of temporary housing have made 'drive-in/drive-out' and 'fly-in/fly-out' arrangements common for mining company employees and associated contractors in regional and remote mining towns.¹

In the 2006 census, a considerable number of people enumerated in mining towns reported that they usually live elsewhere, such as in a capital city or regional coastal city. These people are classified as 'visitors' to the town on the basis of their census form response. Yet many may spend most of their time at either the mining town, a nearby mine, or a service centre/town. For this reason, estimates of the usually resident population of mining towns tend to understate the number of people these towns need to service during any given 24 hour period.

Data sources and definitions

This article is based on data from the ABS Census of Population and Housing. This data source provides information on small geographic areas and on where people spend time in addition to where they consider they usually live. However the quality of census data is adversely affected by undercounting, non-response and self-reporting. For this reason, the number of people who state on a census form that they are employed in the mining industry will be lower than ABS Labour Force Survey and industry estimates of the size of the mining industry workforce. Census measures of unemployment, labour force participation and income presented in this article are likely to also differ from survey estimates and administrative records.

The *census-enumerated population* of a geographic area is the number of people counted in that area on census night plus the number of people who (because of non-contact by census collectors) were imputed to have spent census night in that area.

The difference between an area's census-enumerated population and its *census usual residence population* is that the latter excludes people enumerated in the area on census night who usually live elsewhere, and includes people enumerated outside the area on census night who usually live in the area.

An area's *estimated resident population* is calculated by increasing its census usual residence population to compensate for the net undercounting of people in that area on census night,² and for usual residents who were overseas on census night.

Throughout this article (unless otherwise stated) the characteristics of an area's people are the characteristics of that area's census-enumerated population, as this population best depicts the actual experience of life in that area.

People enumerated in the mining industry in their main job



Source: 1961–2006 ABS Censuses of Population and Housing.

Mining industry employment trends

Although slower than overall employment growth, the number of people recorded on population census forms as being employed in the mining industry in their main job almost doubled between 1961 (54,401) and 2006 (106,895). Over this 45-year period, the mining industry experienced times of robust jobs growth punctuated by periods of contraction, with employment trends differing between the states and territories. Western Australia and Queensland had particularly strong growth between 2001 and 2006, with smaller increases observed in New South Wales, South Australia and Victoria.

The sharp increase in mining industry employment between 2001 and 2006 is likely to have barely been felt in the vast majority of Australia's towns and cities where mining

industry jobs comprise a very small proportion of all jobs. However census data suggest that during this time marked change was experienced in numerous regional and remote towns traditionally characterised by proportionately high levels of mining industry employment.

Population growth

Of all the urban centres in Australia in 2001, there were 12 that had average annual census-enumerated population growth of at least 2% between 2001 and 2006, and at least one in six employed people working in the mining industry in their main job in 2006.

With the sole exception of South Australia's Roxby Downs (near a large copper, uranium, gold and silver ore body) all of these urban centres are located in either the Pilbara region in north-west Western Australia (mainly iron ore, oil and gas) or the Bowen Basin in central-eastern Queensland (mainly coal).

Some of these towns reversed population decline they had experienced during preceding intercensal periods. For example, the number of people enumerated on census night in Moranbah (Queensland) fell from 6,883 in 1986 to 6,133 in 2001, before rebounding to 8,258 in 2006.

Geographic classifications

In broad terms, an *Urban Centre* (UC) is a population cluster of at least 1,000 people and a *Locality* is a population cluster of between 200 and 999 people. The residual *Rural Balance* comprises population clusters of fewer than 200 people. Categorisation criteria are detailed in *Australian Standard Geographical Classification (ASGC) July 2007* (ABS cat. no. 1216.0). Maps showing the location of urban centres appear in *Statistical Geography: Volume 3* (ABS cat. no. 2909.0).

For Western Australia, the boundary of each *Statistical Division* (SD) aligns with the boundary of its corresponding State Planning Region. The boundaries of Western Australian SDs at the time of the 2006 Census of Population and Housing can be viewed in maps in the 2006 edition of *Statistical Geography: Volume 1* (ABS cat. no. 1216.0). See the 2001 edition of this publication to view the slightly different Western Australian SD boundaries applying at the time of the 2001 Census.

Almost 6% more people were enumerated in Australia on census night 2006 than in 2001, representing an average annual rate of population increase of 1.1% during the five year period. Compared with this national average, the census-enumerated populations of the 12 featured high-growth mining towns expanded at between 2.2% per year (Roxby Downs) and 8.0% per year (Dysart) between 2001 and 2006.

Population growth in selected urban centres(a)

	Census-enumerated population			Census usual residence population			Estimated resident population(b)		
	7 August 2001	8 August 2006	Annual growth	7 August 2001	8 August 2006	Annual growth	30 June 2001	30 June 2006	Annual growth
	'000	'000	%	'000	'000	%	'000	'000	%
Dysart (Qld)	2.5	3.6	8.0	2.4	3.1	5.6	2.5	3.4	6.0
Paraburdoo (WA)	1.2	1.7	7.5	1.2	1.6	5.9	1.3	1.7	6.1
Dampier (WA)	1.5	2.0	6.2	1.3	1.4	1.2	1.4	1.5	1.6
Moranbah (Qld)	6.1	8.3	6.1	5.9	7.1	3.8	6.3	7.6	3.8
Newman (WA)	3.5	4.7	6.1	3.3	4.2	4.9	3.6	4.6	5.3
Blackwater (Qld)	4.9	6.2	4.5	4.5	5.0	2.1	4.8	5.4	2.4
Middlemount (Qld)	2.1	2.5	4.2	1.9	2.0	1.3	2.0	2.2	1.7
Karratha (WA)	10.8	13.3	4.2	9.9	11.7	3.5	10.5	12.6	3.8
Tieri (Qld)	1.6	1.9	3.1	1.5	1.7	1.7	1.6	1.8	2.2
Emerald (Qld)	10.1	11.5	2.6	9.3	11.0	3.5	9.9	11.8	3.5
Moura (Qld)	1.8	2.0	2.3	1.7	1.8	0.6	1.8	1.9	0.5
Roxby Downs (SA)	3.6	4.0	2.2	3.4	3.8	2.6	3.5	4.1	2.9
Australia	18 972	20 062	1.1	18 769	19 855	1.1	19 413	20 698	1.3

(a) All 2001 urban centres with average annual census-enumerated population growth of at least 2% between 2001 and 2006 and at least one in six employed people working in the mining industry in their main job in 2006.

(b) Estimates for the urban centres at 30 June 2006 are preliminary rebased estimates and are based on the 2006 Census. Final rebased estimates will become available on 19 August 2008. For more information see the feature article in *Australian Demographic Statistics, December Quarter 2007* (ABS cat. no. 3101.0).

Source: 2001 and 2006 ABS Censuses of Population and Housing; *Australian Demographic Statistics, December Quarter 2007* (ABS cat. no. 3101.0).

... visitors

Of those enumerated in the selected 12 high-growth mining towns, the proportion spending census night away from home generally rose relatively sharply between 2001 and 2006. For example, compared with the marginal nationwide increase from 5% to 6%, Dampier's census night visitor population jumped from 17% to 37%, Blackwater's from 8% to 24%, and Tieri's from 10% to 26%. Visitor increases were less marked in Roxby Downs (7% to 11%) and Karratha (13% to 17%) while the most populous urban centre in Queensland's Bowen Basin (Emerald) actually had a slightly smaller proportion of visitors in 2006 (11%) than in 2001 (12%). The generally increased visitor presence suggests that 'drive-in/drive-out' and 'fly-in/fly-out' arrangements have become an increasingly popular way of attracting workers to regional and remote mining towns.

... usual residents

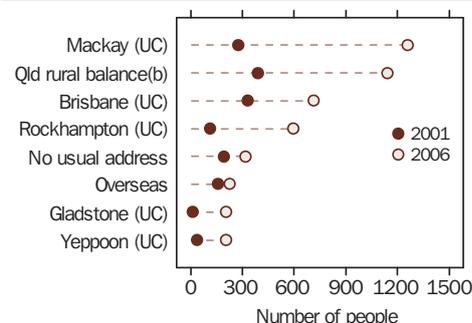
All of the featured mining towns increased their census usual resident populations between 2001 and 2006, and most of them gained residents much faster than the rest of the country. However, because of the generally increased visitor presence, only Emerald and Roxby Downs increased their census usual resident population more swiftly than their census-enumerated population.

In 2006, most of the towns had an estimated resident population smaller than their census-enumerated population, with the shortfall largest in Blackwater, Karratha, Moranbah and Dampier. Knowledge of this difference is useful to planning agencies and providers of goods, services and infrastructure such as accommodation, water and sewerage.¹

Where do the visitors usually live?

On census night in 2006, 49,560 people were enumerated in a Bowen Basin urban centre or locality, including those featured in this article. Of these people, 17% (8,512) spent the night in a dwelling in which they did not usually live. Some (225) usually lived overseas, 320 did not have a usual address, 1,313 were from farms and small communities of less than 200 people throughout Australia (of whom 1,144 were Queenslanders) and the remaining 6,654 hailed from 386 Australian urban centres and localities. Topping the list was Mackay, home to 1,260 or 15% of all census night visitors in Bowen Basin urban centres and localities in 2006. Next on the list was the state capital, Brisbane (713), followed by the nearby inland city of Rockhampton (595) and the central Queensland coastal centres of

Usual residence of census night visitors in Bowen Basin towns(a)



- (a) Comprises the urban centres and localities of Biloela, Blackwater, Capella, Clermont, Collinsville, Dysart, Emerald, Glenden, Middlesmount, Moranbah, Moura, Nebo, Springsure, Theodore and Tieri.
 (b) Areas within Queensland populated by clusters of less than 200 people (e.g. farms and small communities).

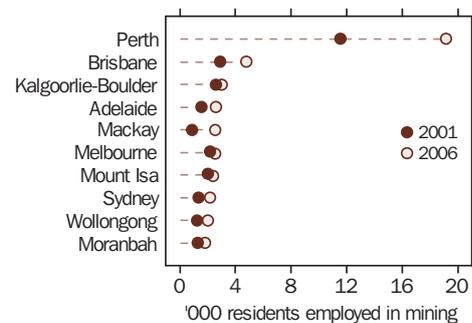
Source: 2001 and 2006 ABS Censuses of Population and Housing.

Gladstone (206) and Yeppoon (also 206). There were appreciably more census night visitors from Mackay, Brisbane, Rockhampton, Gladstone, Yeppoon and rural Queensland in Bowen Basin towns in 2006 than in 2001.

The increase in the number of residents of Brisbane and Mackay enumerated in Bowen Basin towns was accompanied by relatively large increases between 2001 and 2006 in the number of Brisbane and Mackay residents employed in the mining industry (up by 65% and 202% respectively). In 2006, Brisbane and Mackay each had more residents employed in the mining industry than did Mount Isa or any Bowen Basin town.

By far the largest mining centre in Australia (in terms of mining industry employment) is Perth. This was even more apparent in 2006 than in 2001, due to a surge in the number of

Urban centres with the most residents employed in the mining industry(a)



- (a) In their main job held in the week prior to census night.

Source: 2001 and 2006 ABS Censuses of Population and Housing.

Perth urban centre residents who said they were employed in the mining industry in their main job (from 11,543 in 2001 to 19,160 in 2006). In 2006, most of them (11,255 or 59%) reported the workplace address of that job to be in the Perth Statistical Division. However, many resided in Perth and worked in the Pilbara (1,972 or 10%), South Eastern (1,613 or 8%) and Central (1,068 or 6%) Statistical Divisions of Western Australia. Between 2001 and 2006, the census enumerated a near fourfold increase in Perth residents working in the mining industry in the Pilbara Statistical Division, where this article's featured towns of Paraburdoo, Dampier, Newman and Karratha are situated.

Demographic changes

Partly because many of the usual residents of the featured mining towns had moved to their town within the previous five years, people enumerated in these towns were less likely than other Australians to have been living at the same address one year earlier and five years earlier. The influx of new residents combined with the increased visitor presence resulted in some marked changes to the demographic profile of most of the towns. All 12 had more males than females in 2001, and increased their male to female ratio during the ensuing intercensal period. The

Workplace of residents of the Perth urban centre employed in the mining industry(a)

	2001	2006
	no.	no.
Western Australia		
Perth (SD)	6 666	11 255
Pilbara (SD)	526	1 972
South Eastern (SD)	1 468	1 613
Central (SD)	840	1 068
Kimberley (SD)	289	308
Midlands (SD)	292	242
South West (SD)	144	87
Upper Great Southern (SD)	32	29
Lower Great Southern (SD)	69	8
Off-Shore Areas & Migratory	92	165
No fixed place of work	316	826
Undefined	221	428
Interstate	226	264
Not stated	362	895
Total	11 543	19 160

(a) In the main job held in the week prior to census night. Data quality affected by census underenumeration, and census form non-response and inadequate response. * SD = Statistical Division

Source: 2001 and 2006 ABS Censuses of Population and Housing.

Selected demographic characteristics of people enumerated in selected urban centres(a)

	Census night visitors		At home on census night and usually lived in same home 1 year earlier		At home on census night and usually lived in same home 5 years earlier		Median age		Aged 0-14 years		Males per 100 females		At home on census night and living with family in a private dwelling	
	2001	2006	2001	2006	2001	2006	2001	2006	2001	2006	2001	2006	2001	2006
	%	%	%	%	%	%	years	years	%	%	ratio	ratio	%	%
Dysart (Qld)	7	19	67	61	40	32	31	32	25	23	143	173	77	66
Paraburdoo (WA)	8	16	67	63	28	17	28	31	31	27	122	149	79	69
Dampier (WA)	17	37	61	47	36	29	34	38	24	17	136	191	70	50
Moranbah (Qld)	7	20	70	55	40	27	31	31	27	22	126	158	81	66
Newman (WA)	10	17	58	54	24	21	30	32	28	24	119	133	74	63
Blackwater (Qld)	8	24	62	53	29	26	30	32	29	21	124	173	80	60
Middlemount (Qld)	10	25	65	50	35	20	30	33	25	23	138	185	76	56
Karratha (WA)	13	17	59	53	28	22	30	32	26	23	118	126	76	63
Tieri (Qld)	10	26	62	56	20	21	28	32	29	20	147	190	77	62
Emerald (Qld)	12	11	57	60	22	26	29	29	25	25	108	114	76	76
Moura (Qld)	7	19	69	58	44	37	33	33	23	21	124	139	78	67
Roxby Downs (SA)	7	11	65	59	20	25	28	30	30	27	125	130	81	75
Australia	5	6	74	78	47	50	35	36	21	20	97	97	79	77

(a) All 2001 urban centres with average annual census-enumerated population growth of at least 2% between 2001 and 2006 and at least one in six employed people working in the mining industry in their main job in 2006.

Source: 2001 and 2006 ABS Censuses of Population and Housing.

ratio increased most dramatically in Dampier (from 136 to 191 males per 100 females), Blackwater (124 to 173), Middlemount (138 to 185) and Tieri (147 to 190).

Between 2001 and 2006, the median age of the population rose in most of the towns, and the proportion of 0–14 year olds in their populations generally fell. Nevertheless, in 2006 they still tended to be relatively youthful in comparison with the rest of the nation. People in the 12 high-growth mining towns also tended to have been less likely in 2006 than in 2001 to have spent census night at home with one or more family members in a private dwelling. This is largely due to the increased visitor presence and may in part reflect larger 'drive-in/drive-out' and 'fly-in/fly-out' workforces. The three abovementioned demographic characteristics underwent pronounced change in towns that experienced a large increase in their visitor population (i.e. Dampier, Blackwater, Tieri and Middlemount). In contrast, they were stable in Emerald and little changed in Roxby Downs.

Strong labour markets

All of the selected mining towns had higher labour force participation rates and, with the sole exception of Middlemount, lower unemployment rates in 2006 compared with

2001. Relative to the modest lift in the census-measured national labour force participation rate (from 63% in 2001 to 65% in 2006) particularly strong rises were observed in Blackwater (75% to 85%) and Moranbah (76% to 85%). The smallest increase among the towns (1.8 percentage points in Newman) was still larger than the national increase of 1.6 percentage points.

In 2006, each town's census-enumerated population had an unemployment rate below 2.6%; less than half the census-measured national rate of 5.2%. Apart from Blackwater and Dampier, employed people in each town were more likely in 2006 than in 2001 to work in the mining industry in their main job.

... and high incomes

The mining industry's dominant and generally rising share of employment in the towns, in tandem with its payment of high wages³, partly explains the comparatively large and mostly rising incomes of full-time workers enumerated in the featured towns. In 2006, census-measured median weekly income usually received from all sources by Australians who worked at least 35 hours in the week prior to the census was \$881. In Tieri, where 61% of employed people worked mainly in the mining industry, it was almost

Change in labour utilisation and real income(a) in selected urban centres(b)

	Labour force participation rate		Unemployment rate		Employed in the mining industry		Real(c) median weekly income of full-time workers	
	2001	2006	2001	2006	2001	2006	2001	2006
	%	%	%	%	%	%	\$	\$
Dysart (Qld)	79	84	3.0	1.5	44	49	1 376	1 579
Paraburdoo (WA)	82	87	2.2	1.8	53	58	1 630	1 703
Dampier (WA)	81	86	3.7	1.5	28	27	1 296	1 616
Moranbah (Qld)	76	85	4.3	1.6	45	47	1 392	1 573
Newman (WA)	82	84	3.2	1.4	41	45	1 400	1 565
Blackwater (Qld)	75	85	5.1	2.0	42	38	1 360	1 467
Middlemount (Qld)	79	86	1.0	2.0	51	57	1 670	1 610
Karratha (WA)	79	82	5.0	2.3	14	19	1 079	1 342
Tieri (Qld)	78	84	2.3	1.5	58	61	1 740	1 759
Emerald (Qld)	78	82	4.4	1.9	12	18	852	1 032
Moura (Qld)	74	81	5.3	2.6	30	40	1 209	1 389
Roxby Downs (SA)	84	88	3.1	2.4	44	48	1 317	1 406
Australia	63	65	7.4	5.2	1	1	818	881

(a) Among people enumerated in the listed geographic area on the night of the census.

(b) All 2001 urban centres with average annual census-enumerated population growth of at least 2% between 2001 and 2006 and at least one in six employed people working in the mining industry in their main job in 2006.

(c) Actual 2001 dollar values have been upward-adjusted for inflation using the All groups Consumer Price Index. This enables an assessment of how people's purchasing power or standard of material wellbeing changed between 2001 and 2006.

Source: 2001 and 2006 ABS Censuses of Population and Housing; *Consumer Price Index, Australia, March 2008* (ABS cat. no. 6401.0).

double (\$1,759). Although still relatively high, incomes were clearly lower in the regional service hubs of Emerald (\$1,032) and Karratha (\$1,342) which had much lower proportions in mining industry jobs (18% and 19%).

According to census data, Australia's full-time workers had \$63 per week more purchasing power in 2006 than in 2001. Much larger real gains were received by full-time workers in Newman (up \$165 per week), Moura (\$180), Emerald (\$180), Moranbah (\$181), Dysart (\$203), Karratha (\$263) and Dampier (\$320).

Future directions in measurement of service populations

In addition to 'drive-in/drive-out' and 'fly-in/fly-out' workers, many other Australians have multiple places of residence. They include children living with parents in separate dwellings, students at boarding schools, members of the armed forces, Indigenous communities in some parts of northern Australia who live in different areas in wet and dry seasons, and the emerging phenomenon of 'grey nomads' who travel north during winter.⁴

The increasing mobility of Australians and use of population numbers for the allocation of resources has created a growing demand for estimates of service populations within local government boundaries. In recognition of the rising interest in service population estimation, the ABS has recently published the information paper *Population Concepts, 2008* (cat. no. 3107.0.55.006) which discusses various service population definitions, conceptual clarifications, and associated measurement issues. Future directions for ABS population estimation will be influenced by the need for service population estimates and their application in matters related to decision making and policy and program formulation and monitoring.⁴

Endnotes

- 1 Department of Local Government, Planning, Sport and Recreation 2006, *Bowen Basin population report: Full-time Equivalent population estimates for nine Local Government Areas in the Bowen Basin, June 2006*, Queensland Government, Brisbane.
- 2 Australian Bureau of Statistics 2007, *August 2006 Census of Population and Housing – Details of Undercount, Australia*, cat. no. 2940.0, ABS, Canberra.
- 3 Australian Bureau of Statistics 2008, *Average Weekly Earnings, Australia, February 2008*, cat. no. 6302.0, ABS, Canberra.
- 4 Australian Bureau of Statistics 2008, *Population Concepts, Australia, 2008*, cat. no. 3107.0.55.006, ABS, Canberra.

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