

SOCIO-ECONOMIC PERFORMANCE ACROSS AUSTRALIA'S NON-METROPOLITAN FUNCTIONAL ECONOMIC REGIONS¹²

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ABSTRACT: There has been a significant amount of work published which aims to understand the socio-economic performance of Australia's non-metropolitan regions, cities and towns. Significantly much of this work has illustrated the variation in outcomes that characterise different places as they adjust to new and evolving social, economic, demographic and environmental realities. This existing research often focuses on spatial boundaries (regions, cities or towns) that are created for administrative reasons. While this is useful, it is also important to understand the social, economic and other processes as they are occurring in places that make up functional social or economic regions. Addressing the socio-economic outcomes of such functional regions is the focus of this paper. It utilises newly derived functional economic regions for non-metropolitan Australia and census data for 2006 to undertake a multivariate analysis which explores the variation in socio-economic outcomes across these new regions. Importantly, this analysis provides a new understanding of the varied outcomes that characterise Australia's non-metropolitan regions.

1. INTRODUCTION

The socio-economic structure and functions of non-metropolitan cities, towns and regions have been an area of significant research interest within the disciplines of geography and other social sciences for some period of time. Various studies have attempted to understand the functional role of cities and towns (Smith 1965a; Beer et al. 1994; Beer and Maude 1995; Beer 1999) or have attempted to uncover broad patterns of change (Hugo and Bell 1998; Hugo 2001; Salt 2001; Burnley and Murphy 2002, 2004). Others have attempted to understand the broad socio-economic characteristics of non-metropolitan

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localities often considering patterns in terms of the broader settlement system (Baum et al. 1999; Lloyd et al. 2000; Stimson et al. 2001; Dixon et al. 2001).

While some have criticised the use of functional classifications (Smith 1965b) the range of studies concerned with non-metropolitan Australia have been important in that they contribute to awareness raising across several economic, social and environmental issues. It is well conceived that the backdrop to regional development policy has been and will continue to be subject to dramatic shifts and transitions (Collits 2004). One purpose of studies such as those noted above has therefore been to identify and chart these changes and to provide commentary and understanding of the processes involved and the direct and indirect outcomes at various levels. Moreover, in a number of cases these broad studies, which are based on the use of quantitative analysis of census and other official data, have provided the background for more in-depth analysis using case studies of particular localities or regions or other primary data methods (see for example SERC 2002; Western et al. 2005).

The current paper follows the work of Stimson et al. (2001, 2003) and Baum et al. (1999, 2005) and provides a new insight into regional socio-economic performance by analysing outcomes across a new spatial unit—Functional Economic Regions (FERs). Functional Economic Regions are amalgamations of Statistical Local Areas which represent meaningful economic spaces. They provide an alternative spatial division for social analysis that moves away from administrative boundaries. The analysis of FERs therefore has potential to provide a further useful policy dimension. The analysis presented in this paper develops typologies of socio-economic performance across non-metropolitan FERs using a hierarchical clustering approach to group spatial units into meaningful subgroups and then considers the differences in the clusters by utilising analysis of variance techniques. This allows us to develop a typology of regions, taking into account varying levels of socio-economic performance. In what follows we first consider the research into non-metropolitan regions in more detail prior to discussing the methods and data used in the analysis and the typology developed. The paper concludes by discussing the implications of patterns identified and more broadly the implications of using the FERs as the spatial unit of analysis.

2. DIFFERENTIAL SOCIAL AND ECONOMIC CHARACTERISTICS IN NON-METROPOLITAN REGIONS

Often the issues that drive an interest in understanding non-metropolitan Australia are situated in questions about change and transition and the understanding of similarity and difference across non-metropolitan localities at different scales. Some of the discussion relating to these outcomes concentrates on a broad regional or rural crisis, treating non-metropolitan Australia as a single aggregate and in comparison with metropolitan regions finds, among other things, that ‘at no time in the nation’s history has there been a wider chasm between the cities and the bush (Blainey 2001; see also Anderson 1999; Collits 2004). Such a conclusion is considered by many of those studying regional issues as being short-sighted, arguing that the real focus should be on identifying

the diversity that has come to characterise non-metropolitan Australia. This later line of thought has been the theme of recent discussions and research into the impact of change in non-metropolitan Australia. Systematic research and debate regarding such differences emerged during the 1990s, and has been highlighted in numerous publications (Beer et al. 1994, Beer and Maude 1995; Productivity Commission 1998; Beer 1999; Stimson et al. 2001, 2003; Baum et al. 1999, 2005; Gray and Lawrence 2001; Beer et al. 2003 and Pritchard and McManus 2000). Discussing the outcomes of globalisation on regional Australia, for instance, Gray and Lawrence (2001: 115) argue that:

Alongside the promise of the generation of wealth comes a certainty that deprivation and poverty will accompany it. Along with the opportunity for global marketing comes vulnerability to forces of global investment...The inevitable result is a deepening of the chasms between the people and communities which have inherent advantages and those which do not.

The question of differential outcomes is also raised by Beer et al. (2003). They argue strongly against a narrow city/country dichotomy and argue that '[r]ecent decades have witnessed significant shifts across Australia in the spatial distribution of economic growth, socio-economic lifestyle and status. We have seen the emergence of a new geography comprised of winners and losers' (p. 57). Put another way the social and economic profile of non-metropolitan Australia is one characterised by several often divergent patterns across groups of localities.

Understanding the development of this new geography of winners and losers is an important aspect of research into socio-economic outcomes in non-metropolitan Australia. Literature dealing with the broad issues of economic restructuring provides an important point of reference; it is generally agreed that processes including increasing globalisation, deregulation of markets and shifts in industry and employment patterns have empowered some localities and disempowered others (Collits 2004; Sorenson 2000).

Much of the research and discussion in this area has focused on the significant economic restructuring that has been witnessed in non-metropolitan regions, with a consideration of ways in which this restructuring has impacted across a broad range of outcomes. Research by the Australian Bureau of Agricultural and Resource Economics (ABARE) illustrates the general nature of these changes; between 1986 and 1996 changes in agriculture and mining have had widespread impacts on non-metropolitan regions in terms of employment and population dynamics while manufacturing, tourism and other services — sunrise industries — have become more important in non-metropolitan regions (Garnaut et al. 2001). Similar outcomes are identified by the Bureau of Transport and Regional Economics (2004) who showed that over the more recent decade 1991 to 2001 a more diverse industry structure has developed in regional Australia with significant impacts on local outcomes such as employment (see also Productivity Commission 1998; Lawson and Dwyer 2002).

Argent (2002) considers the impacts of restructuring on farming communities and a hypothesised transition between productivism and post-productivism in Australian agriculture. While he disagrees with such a binary treatment of the

changes occurring in the sector he does recognise the impacts of a 'new paradigm—based on economic fundamentalism, environmentalism and a landscape aesthetic drawn from the rural idyll' (p. 106). This new paradigm, when considered across the range of social, demographic and economic processes suggests that 'Australia's rural lands are indeed undergoing an intensive process of re-evaluation; a process that is arguably producing many different rurals' (p. 111).

Others have discussed the impacts of restructured mining and agricultural sectors on the prosperity of local communities. There is concern about the extent to which local industry is being de-coupled from local economies (Gray et al. 1993; Gow 1994; Conway 1995; Gray and Lawrence 2001; Beer et al. 2003). Beer et al. (2003, pp. 84-85) argue that the restructuring of the agriculture and mining sectors have adversely impacted on rural and regional localities as 'local towns are by-passed for purchases and labour in favour of international best practice solutions that draw resources from far afield'.

For agriculture this 'decoupling thesis' was introduced to the Australian debate by Stayner and Reeves (1990), who refer to a tendency for local communities to have become increasingly de-coupled from those of proximate farm industries. This is the result both of diversification in town economies, and processes of farm aggregation and the corporatisation of agriculture (Joseph et al. 2001). The end result is often considered in negative terms for those local towns affected, with among other things rapidly altered social, demographic and political structures (Sorenson 1992; Gray and Lawrence 2001; Salt 2001; Smailes 2002). Similar outcomes are also noted for mining as a result of the increased use of fly-in-fly-out practices (Storey 2001; O'Connor and Kershaw 1999). With reference to these changes O'Connor and Kershaw (1999, 83) argue that:

The mix of job opportunities in some parts of non metropolitan areas, traditionally very dependent on work in the mining industry, may tend to become more narrowly circumscribed, as many of the jobs, especially those involving complex tasks, will be provided by firms hiring labour in capital city locations.

In the mining sector, the local multiplier effects may be low (Beer et al. 2003), while those employed in the sector are likely to earn high wages and salaries.

Much has also been made of the impact of tourism on non-metropolitan fortunes (Beer et al. 2003; Mullins 1991, 1995; Proser 2000; Garnaut et al. 2001; Salma 2002). Although the impact may be limited, with only selected places benefiting (Maude 2004; Beer et al. 2003) there is evidence that those places who can reinvent or present themselves as significant tourist destinations can gain in terms of a range of local multiplier effects (Garnaut et al. 2001; Proser 2000; Salma 2002). Work by Salma (2002) provides estimates of the impact of tourism on regional outcomes and finds that during 1997/98 the industry contributed around 8.5 percent of national GDP and generated around 853 500 jobs. Moreover, as Beer et al. (2003, p. 115) point out '[s]ince many of the things that attract tourists relate to the natural environment or to cultural heritage and are located outside the capital cities, tourism is seen as one of a limited

number of potential growth industries in much of regional Australia'.

The impacts across other areas are also of interest. While manufacturing has been declining in large cities, some manufacturing growth in selected areas has had positive impacts (Beer et al. 2003), while the impact of new economy industries, while limited, has had positive flow on effects for large service based cities and towns (Birrell and O'Connor 2000; Maude 2004). With regard to the later Birrell and O'Connor (2000, p. 54) note how research has identified 'a major group of regional centres whose well-being depends largely on their role in providing employment in service industries'. They go on to say that '[t]he regional centres in question include most of those that planners have in mind when they think of the prospects of encouraging employment in the new economy' (p. 54).

While issues connected with economic restructuring are of significant importance in understanding non-metropolitan socio-economic outcomes, demographic and population shifts are equally important (Argent 2002). There has been analysis of population hot spots and cold spots (Stimson et al. 1998; Baum and O'Connor 2005) which have pointed to broad patterns of population change (and employment change as well). Broad patterns are often understood in terms of a dichotomy of regions, with a newer (usually sunbelt regions) gaining population and activity through migration and local expansion, and a older (colder, rustbelt regions) losing jobs due to out-migration and industrial decline. Considering population change in non-metropolitan regions more specifically Hugo (2001, p. 28) illustrates that pastoral areas are generally experiencing declines in population, while other areas are continuing to see significant population in-movement and growth. This population shift in non-metropolitan regions has been widely discussed in terms of the movement of low income and welfare dependent people to coastal localities resulting in negative outcomes (Hugo and Bell 1998; Burnley and Murphy 2002, 2004) and more recently the processes surrounding the sea-change or tree-change phenomena (Burnley and Murphy 2002, 2004).

Clearly the intersection of the myriad of processes that impact on non-metropolitan Australia result in a regional representing a mosaic of socio-economic outcomes and experiences. Understanding this mosaic of outcomes has been the intent of the research by others including Stimson et al. (2001, 2003) and Baum et al. (1999, 2005) and is also the intent of this paper. It is the methodology to undertake the analysis of this mosaic that the paper now turns.

3. METHODOLOGY

The development of typologies has its foundations in the early sociological literature on the social ecology of cities (see Theodorson 1982 for an overview) and more recently in understanding the structure of post-industrial cities and urban regions (Massey and Eggers 1993, Berry 1996, Coulton et al. 1996, Baum et al. 2005, Mikelbank 2004). Emerging from a need to understand and simplify complex processes, the use of typologies quantitatively identifies similarities and differences between observations, classifies observations according to these outcomes and provides synthesis and understanding of the groups. The

typologies are not meant to be explanations of processes per se, but are attempts to provide systematic classification with which to aid interpretation of complex phenomena. In the language of the previous section they allow us to gain understanding of the socio-economic mosaic that has developed in non-metropolitan Australia.

The empirical development of typologies has followed a number of paths but most usually proceeds by undertaking some form of data reduction technique or data grouping technique or some combination (see for example Baum et al. 1999, 2005, Hill et al. 1998) and then descriptively analysing the resultant outcomes. In the analysis undertaken here we combine a data grouping technique—hierarchical cluster analysis and a means of identifying the difference between the groups—analysis of variance.

3.1 Hierarchical cluster analysis

The objective of developing a typology is to provide simplified sub-groups with which to consider broader processes. There are several methods available to cluster data into meaningful sub-groups, with many being easily run with standard statistical software.

The use of agglomerative hierarchical cluster analysis has been shown to be a useful and effective procedure when the researcher wishes to classify observations into similar groups that can then be profiled for social and economic similarities and differences (Everitt 1993, Hair and Anderson 1987). In agglomerative hierarchical clustering every case is initially considered individually, then the two cases with the lowest distance (or highest similarity) are combined into a cluster. The case with the lowest distance to either of the first two is considered next. If that third case is closer to a fourth case than it is to either of the first two, the third and fourth cases become the second two-case cluster; if not, the third case is added to the first cluster. The process is repeated, adding cases to existing clusters, creating new clusters, or combining clusters to get to the desired final number of clusters. In the analysis presented here groups are constructed by minimising the variance of the squared Euclidean distances for each variable within observations using the Ward method. The outcomes from the clustering exercise include a range of 'saved' cluster membership variables and an agglomeration schedule. The saved cluster membership variables are used to consider the cluster outcomes and the agglomeration schedule is used to determine the target cluster solutions.

3.2 Analysis of cluster outcomes

Apart from clustering the localities that comprise the group of non-metropolitan functional economic regions, the aim of the paper is also to consider how the clusters of localities differ from one another. Several possibilities have been explored in the past including use of multi-variate discrimination analysis (Hill et al. 1998) and use of visualisation of confidence intervals around the mean (Masson and Loftus 2003). Here we opt to employ simple analysis of variance and post-hoc tests where applicable to determine differences in the means of the identified and meaningful cluster groups.

3.3 Data

In developing the typology a range of data was used relating to economic performance, as expressed in individual and household socio-economic characteristics. In general, these variables correspond to those found elsewhere (see for example Stimson et al. 2001, 2003; Baum et al. 1999, 2005, Hill et al. 1998). The data was obtained from the Australian Bureau of Statistics Census of Population and Housing 2006. 24 variables were included in the final analysis:

1. Industry structure:

- % people working in agriculture;
- % people working in mining;
- % people working in manufacturing;
- % people working in mass wholesaling;
- % people working in 'new economy' industries;
- % people working in mass goods and services;
- % people working in mass recreation;
- % people working in construction;
- Level of industry specialisation.

2. Occupational characteristics:

- % people classified as educated professionals;
- % people classified as unskilled workers

3. Education

- % of people with a degree
- % of people who left school at 15 or earlier

4. Income

- % of high income households
- % of low income households
- Ratio of low income to high income

5. Labour force characteristics

- Unemployment rate
- Labour force participation rate
- % of people working part-time

6. Household/demographic characteristics

- % people aged 65 years or older
- % of people with indigenous background;
- % of single parent households
- % of people who had moved to a new statistical local area
- % of non-working families

All of these variables are included in the final clustering approach and subsequent analysis. As many of the variables are reported in percentage terms, a log transformation of the form:

$$\text{Log}(p/1-p), \text{ where } p = P/100$$

is undertaken in order to account for floor and ceiling effects imposed by using percentage (P) based data.

3.4 Spatial unit: Functional Economic Regions

As mentioned in the introduction, an important contribution of this paper is its use of Functional Economic Regions (FERs) as the spatial unit for analysis. FERs for Australia were developed by Mitchell (2008) using 2006 journey to work data and considering interaction via commuting flows using the Intramax procedure. A total of 141 Functional Economic Regions were delineated across Australia using this method.³ Removing those in metropolitan regions reduced this number to 113. A full list of the functional economic regions and the member statistical local areas is contained in the appendix to this paper.

4. TYPOLOGIES OF SOCIO-ECONOMIC PERFORMANCE ACROSS NON-METROPOLITAN FUNCTIONAL ECONOMIC REGIONS

4.1 Selecting the candidate cluster solutions

The application of the Ward's method hierarchical clustering algorithm to the 24 variables across the 113 functional economic regions yielded several possible clusters or groups. Within the established literature there is no agreed upon method of selecting the most appropriate candidate cluster solution (Aldenderfer and Blashfield 1984, Everitt 1983). The important question is at what stage should clustering stop. To this end Everitt (1993, 44) suggests that analysis of the agglomeration coefficient which is routinely calculated during the clustering operation is one appropriate method. The agglomeration coefficient is the sum of the within-group variance of the clusters combined at each progressive stage of the clustering operation. By considering the first derivative (the % change of the coefficient) and second derivative (the % change of the % change) of the agglomeration coefficient it is possible to search for 'marked' increases in the value of this coefficient and therefore guide the choice of candidate cluster solution. Whilst this method was used here to identify possible cluster solutions, the final choice needs to be guided by more pragmatic reasoning. The final cluster solution should be chosen according to the interpretability of the clusters, the manageability of the cluster numbers and the number of observations included in each cluster. In this case, as has been suggested by Hill et al. (1998) and Gittleman and Howell (1995), it is the face validity of the final cluster solution that is of most importance. In this case and following the work of Gittleman and Howell (1995) we also look for groupings that are meaningful, especially with references to particular conceptual and theoretical arguments.

Table 1 contains the partial agglomeration schedule for the analysis performed on the census data across the 113 functional economic regions. The first column of the table lists the stage of the cluster solution while the second column gives the number of clusters at each stage. The agglomeration coefficient is presented in the third column, while the first and second derivative of this are presented in the last two columns. We use the following decision rule

³ The 141 functional economic zones compare with the 67 labour force regions used by the Australian Bureau of Statistics.

to select possible candidate solutions: when there is a marked gain in the agglomeration coefficient, the previous stage is the potential candidate cluster solution. Following this we determine a 'marked' change to be when both the first and second derivative has large changes. Based on this the data presented in Table 1 suggests that the outcomes with 2 clusters, 4 clusters, 9 clusters and 13 clusters might be appropriate.

Table 1. Partial agglomeration schedule for cluster analysis.

Stage	Clusters in the solution	Agglomeration coefficient	First derivative (%) ¹	Second derivative (%) ²
97	17	4239	6.4	-4.0
98	16	4506	6.3	-1.2
99	15	4787	6.2	-1.0
100	14	5086	6.3	0.5
101	13	5404	6.3	-0.1
102	12	5805	7.4	18.8
103	11	6210	7.0	-6.2
104	10	6623	6.6	-4.6
105	9	7071	6.8	1.9
106	8	7757	9.7	43.3
107	7	8714	12.3	27.2
108	6	10040	15.2	23.4
109	5	11509	14.6	-3.8
110	4	13349	16.0	9.2
111	3	19174	43.6	173.0
112	2	26032	35.8	-18.0
113	1	41793	60.5	69.3

Notes: 1. The percentage change in the agglomeration coefficient from the previous stage in column 3; 2. The percentage change of the percentage change in the agglomeration coefficient given in column 4.

A closer analysis of the membership of the cluster, the number of regions in each cluster and the outcomes of the analysis of the cluster means suggested that the 2 cluster solution divided the 113 functional economic regions into a large group of regional/rural regions and a smaller group of remote regions, while the 4 cluster solution and the 9 cluster solution divided these into more specific sub-groups. The 13 cluster solution provided some further refinement, but only in a small way. Moreover, initial analysis suggested that the outcomes of the 4 cluster solution are potential the most robust as it is this stage of the agglomeration schedule that the largest gain occurs. In what follows we consider the outcomes of the 4 cluster solution as the main divisions with the later cluster outcomes being ways of further differentiating the outcomes. In these cases discussion is only considered when the outcomes of these later cluster solutions

are meaningful.⁴

To move the analysis of the cluster outcomes forward, we present a diagram of the cluster outcomes considered in the remainder of the paper (Figure 1). Here we see that the 2 cluster solution, as mentioned, represents a large group of rural /regional economies and a smaller group of remote economies. Reading across from left to right the rural/regional cluster further divides into a cluster of general regional/rural service economies and a cluster characterised by mining functions, with further divisions being comprised of regional and rural subsets (service centre functions, agricultural functions, sea change tree/change functions) and the continuation of the separate mining cluster.

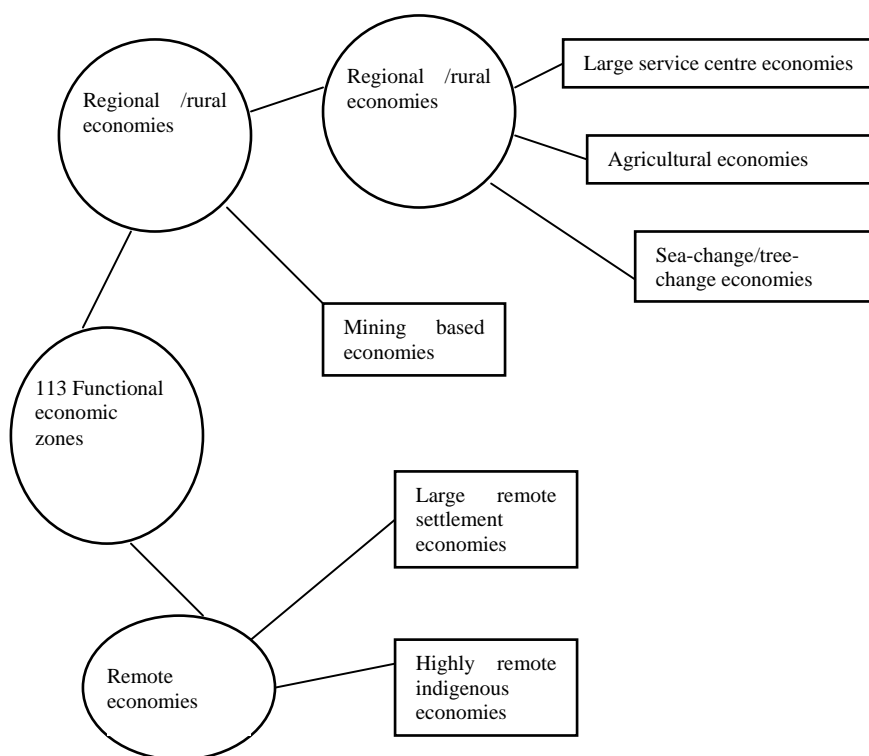


Figure 1. Cluster Map

The initial cluster of remote functional economic regions divides into a further two groups; a cluster associated with indigenous and remote settlement

⁴ In this case the 9 cluster solution and the 13 cluster solution contain outcomes where a functional economic zone is clearly an outlier and ends up clustering on its own or where further divisions of a particular cluster do not significantly add to our understanding. For reasons of space constraints we do not provide all the output (means and plots of the confidence intervals for all cluster solutions).

service functions and a group largely interpreted as an extremely remote economic regions. While the remote clusters divide further, they largely reflect the breaking away of extreme outliers within the total sample.⁵

4.2 Interpreting the clusters

4.2.1 The 2 cluster solution

The means for the 2 cluster solution are presented in Table 2. As mentioned above, the 2 cluster solution suggests that the original 113 functional economic regions divide into a large group of regional/rural economies and a smaller group of remote economies. This characterisation can be seen in the significant differences between the means and the membership of each cluster (see Figure 2). Of the initial 113 functional economic regions, 91 (or 80 percent) are included in the broad regional/rural economies cluster with the remainder being in the second, remote economies cluster. The significant differences between the two clusters can be attributed to the different industry structure and to the demographic profile, especially the presence of significant indigenous populations.

The regional /rural economies cluster had higher levels of employment in agriculture, manufacturing, mass wholesaling, new economy activities and construction, while in contrast the remote economies had significantly higher levels of employment in the mass goods and services industries. Reflecting this, the remote cluster had a significantly higher industry specialisation score. The regional/rural economies exhibited higher skill levels and stronger attachment to the labour force (labour force participation) and had lower levels of households and families characterised as disadvantaged. The remote economies cluster had significantly higher proportions of indigenous population, while, the regional/rural economies had higher proportions of people 65 years and older. Interestingly, and reflecting the composition of indigenous households regional/rural economies had higher levels of low income households.⁶

4.2.2 The 4 cluster solution

The outcomes of the four cluster solution further divide the existing two groups into a further 2 regional/rural clusters and 2 remote clusters.

⁵ While one solution to this problem would have been to run separate analysis differentiated by population size or other characteristics (i.e. rural and remote) (see Baum et al. 2005 for example) it was decided that for this initial analysis of the functional economic zones the goal is to consider all the non-metropolitan zones as a whole.

⁶ It is important to realise that although the data we have used suggests low levels of disadvantage in the indigenous regions, in reality there exists significant disadvantage which is not picked up by standard census variables. The inclusion of variables that are sensitive to indigenous social and economic outcomes would improve the outcomes and will be the subject of further analysis.

Table 2. Cluster means and significance, Cluster solution step 1, 2 cluster solution

	Regional/ Rural economies	Remote economies	Total
% people working in agriculture	13.28	6.38	11.99
% people working in mining	3.61	4.73	3.82
% people working in manufacturing	9.15	2.54	7.91
% people working in mass wholesaling	7.44	2.77	6.56
% people working in 'new economy' industries	6.87	2.30	6.02
% people working in mass goods and services	38.06	61.12	42.38
% people working in mass recreation	8.07	6.65	7.81
% people working in construction	7.49	3.55	6.75
% people classified as unskilled workers	29.03	33.74	29.91
% of people with a degree	8.72	5.87	8.19
% of people who left school at 15 or earlier	48.44	58.25	50.28
% people aged 65 years or older	14.57	4.17	12.62
% of people with indigenous background	5.19	68.36	17.03
% of non-working families	10.29	25.27	13.10
Unemployment rate	5.44	5.63	5.48
Labour force participation rate	59.26	51.33	57.77
% of people working part-time	28.08	36.07	29.58
% of single parent households	10.48	18.84	12.05
% people classified as educated professionals	19.83	20.39	19.93
% of high income households	10.01	11.52	10.29
% of low income households	23.56	17.33	22.39
% of people who had moved to a new statistical local area	23.21	19.94	22.60
Ratio of low income to high income	2.96	2.39	2.85
Level of industry specialisation (specialisation index)	0.30	0.43	0.33

Notes: Significant means are indicated in bold.

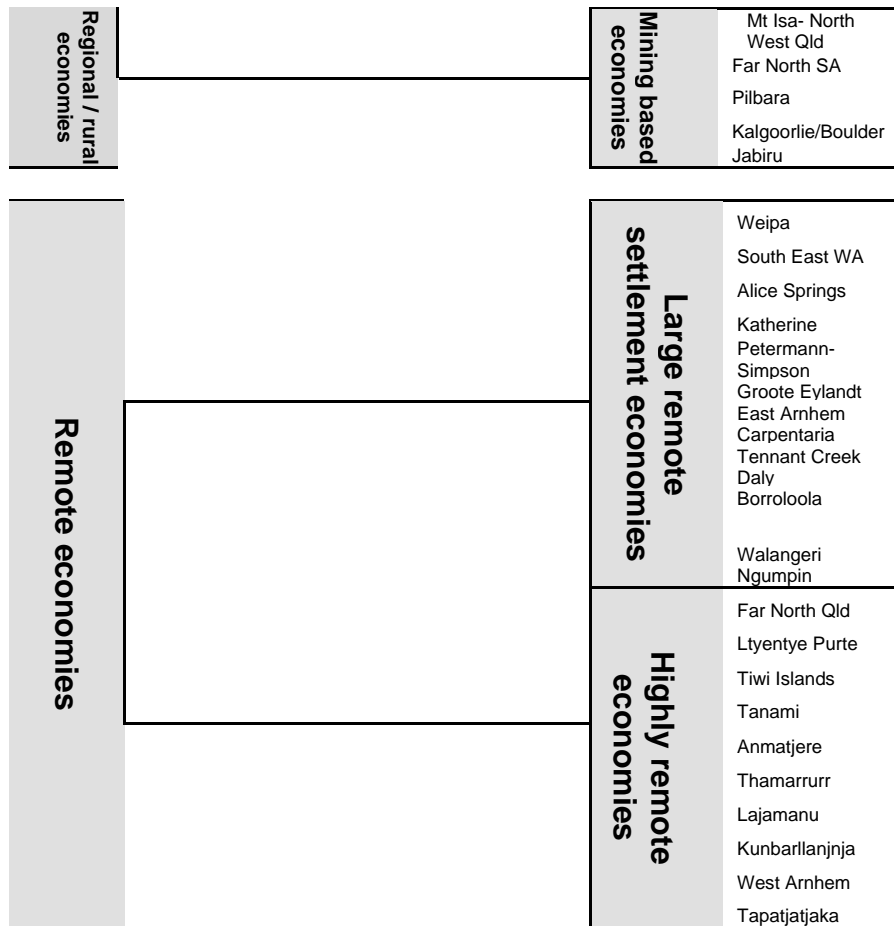
Figure 2. Cluster solutions and function economic regions.

2 cluster solution	4 cluster solution	9 cluster solution	13 cluster solution	Functional economic zone
Regional / rural economies	Regional / rural economies	Large service centre economies	Large service centre economies	Illawarra
				South Eastern NSW
				Hunter
				Bathurst Orange
				Wagga Wagga
				Albury-Wodonga Murray border
				Cooma-Monaro
				Barwon (Vic)
				Central Highlands (Vic)
				Loddon (Vic)
				Gippsland (Vic)
				Gold Coast
				Toowoomba Darling Downs
				Sunshine coast
				Rockhampton-Fitzroy
				Gladstone
				Bowen
				Townsville
				Cairns
				Adelaide Hills-Murray Lands
				Ceduna (SA)
				Albany (WA)
				Central WA
				South West WA
				Busselton-Margaret River (WA)
				Carnarvon
				Kingborough
				Northern TAS
				Coomalie
			Large agricultural service centre economies	Shepparton Murray border
				Mildura
				Mitchell (vic)
				Warrnambool (Vic)
				Western District (Vic)
				Wimmera (Vic)
				Gawler
				Northern SA
				SA Riverlands
				Kangaroo Island
				Eyre
				Lower Eyre Peninsula (SA)
				Naracoorte & Lucindale (SA)
				South East SA

Figure 2 Continued.

Regional / rural economies	Agricultural economies	Agricultural economies	Muswellbrook Gannawarra Goondiwindi (NSW) Dalby (Qld) Roma (Qld) Banana Central West Qld Charters Towers South West Qld Lower great southern (WA) Midlands (WA) Gingin South Eastern WA Flinders (TAS)
		Population In-movement Ag economies	Griffith Burdekin Hinchinbrook Dorset (TAS) Circular Head King Island
	Tree change / sea change	Tree change / sea change	Dubbo North Western NSW Parkes Central Darling Eurobodalla East Gippsland Taree Hastings Coffs Harbour Lismore Tamworth Armidale Warwick Hervey Bay Gympie Bundaberg Copper Coast Victor Harbour Break O'Day Meander Valley Burnie Mersey-Lyell West coast

Figure 2 Continued.



Regional/ rural economic regions

The 2 subgroups derived from the larger regional/rural economies are:

- a continuation of the general regional/rural economic zone cluster; and
- a significant mining based economic cluster. See Table 3.

Table 3. Comparison of cluster means, Cluster solution step two, regional and rural economies and mining based economies

	Regional /rural economies	Mining Based economies	Total
% people working in agriculture	13.86	3.27	11.93
% people working in mining	2.26	26.91	3.79
% people working in manufacturing	9.40	4.85	7.84
% people working in mass wholesaling	7.51	6.28	6.51
% people working in 'new economy' industries	7.00	4.71	5.96
% people working in mass goods and services	38.49	30.77	42.83
% people working in mass recreation	7.98	9.74	7.74
% people working in construction	7.52	7.11	6.69
% people classified as unskilled workers	29.00	29.52	30.15
% of people with a degree	8.68	9.45	8.11
% of people who left school at 15 or earlier	49.11	36.82	50.57
% people aged 65 years or older	15.19	3.98	12.55
% of people with indigenous background	4.68	13.96	17.72
% of non-working families	10.46	7.35	13.18
Unemployment rate	5.55	3.66	5.43
Labour force participation rate	58.87	65.88	57.69
% of people working part-time	28.63	18.54	30.05
% of single parent households	10.51	9.92	12.10
% people classified as educated professionals	19.82	20.00	19.98
% of high income households	8.96	28.03	10.32
% of low income households	24.23	12.02	22.35
% of people who had moved to a new statistical local area	22.69	32.26	22.44
Ratio of low income to high income	3.10	0.47	2.84
Level of industry specialisation (specialisation index)	0.30	0.34	0.33

Notes: Significant means are indicated in bold.

The first is essentially the continuation of the previous group and represents a cluster of general regional /rural economies. It shares many of the characteristics of the previous large cluster being reduced in size from 91 economic regions to 86. The five functional economic regions which separate from the original large regional/rural economies cluster represent the subset of regional economies dominated by the mining industry. The five economic regions included in this cluster are Mount Isa north-west Queensland, Far north South Australia (incl Cooper Pedy), Pilbara, Kalgoorlie and Jabiru. Significantly, this cluster is differentiated from the larger regional/rural cluster via its industry structure, skills base, labour force characteristics and demographic characteristics. Not surprisingly this cluster has a significant high level of employment in mining (26.91 percent) and relative to the opposing cluster has a low level of

employment in agriculture and in manufacturing. In labour force terms the differences between the clusters are reflected in higher labour force participation and lower unemployment and part-time employment in the mining cluster. The mining cluster has a low proportion of population aged 65 years and above and possibly reflecting this has a low level of people who left school at or before turning 15. Reflecting the well documented prosperity within the mining sector the group of economic regions in the mining cluster have significantly higher proportions of high income households when compared to the larger general regional/rural cluster, and at the same time lower proportions of low income households and a significantly lower ratio of low income to high incomes.

Remote regions

The 2 resultant divisions from the remote economies cluster are classified as:

- large remote settlement economies;
- highly remote indigenous economies. See Table 4.

Table 4. Comparison of cluster means, Cluster solution step two, large remote settlement economies and highly remote economies

	Large remote settlement economies	Highly remote economies	Total
% people working in agriculture	9.29	2.80	11.93
% people working in mining	7.24	1.25	3.79
% people working in manufacturing	3.77	0.80	7.84
% people working in mass wholesaling	3.82	1.25	6.51
% people working in 'new economy' industries	3.20	1.00	5.96
% people working in mass goods and services	51.45	75.92	42.83
% people working in mass recreation	9.52	2.55	7.74
% people working in construction	4.42	2.15	6.69
% people classified as unskilled workers	32.94	37.02	30.15
% of people with a degree	6.90	4.04	8.11
% of people who left school at 15 or earlier	52.23	68.01	50.57
% people aged 65 years or older	4.68	3.61	12.55
% of people with indigenous background	52.02	90.62	17.72
% of non-working families	17.69	34.08	13.18
Unemployment rate	4.66	6.22	5.43
Labour force participation rate	57.86	43.20	57.69
% of people working part-time	28.52	49.77	30.05
% of single parent households	16.48	21.63	12.10
% people classified as educated professionals	18.40	23.23	19.98
% of high income households	13.88	8.81	10.32
% of low income households	16.61	18.26	22.35
% of people who had moved to a new statistical local area	25.92	11.20	22.44
Ratio of low income to high income	1.83	2.97	2.84
Level of industry specialisation (specialisation index)	0.39	0.51	0.33

Notes: Significant means are indicated in bold.

The large remote settlement economies cluster contains 12 functional economic regions including those centred on Alice Springs, Katherine, Tenant Creek and East Arnhem. The highly remote economies cluster contains 10 functional economic regions including Tiwi Islands, Thamarrurr, West Arnhem and Tanami. Importantly, many of these remote economic regions represent a single statistical local area with small population numbers. The significant difference between the two remote clusters is reflected in employment in particular industries, participation in the labour force, skill/education levels and the presence of disadvantaged families. Significantly the larger remote settlement economies have a larger proportion of people employed in mass wholesaling than the contrasting highly remote cluster, while at the same time having a significantly lower proportion of employment in mass goods and services. The larger remote settlement based economies also have a significantly higher level of labour force participation. The highly remote economies have a higher proportion of non-working families, population with limited education and a significantly higher proportion of indigenous population.

4.2.3: The nine cluster solution

The cluster diagram presented in Figure 1 and discussed above shows that once further clustering was considered (the nine cluster solution) a further set of 3 sub-clusters are meaningfully derived with the large regional/rural economies cluster splintering further. The mining based cluster remains in-tact while the 2 remote clusters do divided further but are less meaningful. From the 86 functional economic regions contained in the previous Regional / rural economies, the smaller clusters included:

- large service centre functions;
- agricultural functions;
- amenity, sea-change/tree-change functions. See Table 5.

Large service centre economies

A significant number of the original 113 functional economic regions (43 or 38 per cent) remain clustered together in a group which is labelled large regional/rural service function regions. The cluster includes economic regions located in close proximity to major metropolitan areas (Illawarra, Hunter, Sunshine Coast, Adelaide Hills-Murray Lands) together with regions that are easily recognisable as being centres of significant regional service and administrative economies (Bathurst-Orange, Albury-Wodonga Murray border, Townsville, Cairns). What separates membership in this cluster from membership in the previous general category and from the other general regional/rural economic zone sub-clusters relates to the characteristics of the industry-employment profile and the general level of socio-economic opportunity. Reflecting the regional/rural service functions of this cluster it has above average new economy functions, manufacturing functions, mass wholesaling functions and mass recreation functions, and above average proportions of people characterised as educated professionals. It has the equal

lowest industry specialisation score, reflecting the diversity of industry structure. Importantly this cluster has above average proportions of high income households and below average ratio of low to high incomes, which distinguishes it from the other sub-clusters. While we do not report the results here, a further de-composition of this cluster maintains a large group of large general service based economies and a smaller group of agricultural service centres.

Table 5. Comparison of selected cluster means, Cluster solution step three, large service centre functions, agricultural functions, amenity, sea-change/tree-change functions

	Large service centre economies	Agricultural economies	Sea- change/ tree- change economies	Total
% people working in agriculture	10.00	25.49	10.97	11.93
% people working in mining	1.68	3.07	2.62	3.79
% people working in manufacturing	10.25	8.73	8.39	7.84
% people working in mass wholesaling	7.58	7.60	7.28	6.51
% people working in 'new economy' industries	7.98	4.87	7.01	5.96
% people working in mass goods and services	40.05	32.62	40.66	42.83
% people working in mass recreation	8.25	5.74	9.41	7.74
% people working in construction	8.17	6.03	7.59	6.69
% people classified as unskilled workers	28.52	30.20	28.86	30.15
% of people with a degree	9.73	7.25	7.97	8.11
% of people who left school at 15 or earlier	43.89	53.47	55.09	50.57
% people aged 65 years or older	14.09	14.22	18.09	12.55
% of people with indigenous background	3.87	6.50	4.60	17.72
% of non-working families	10.08	8.64	12.75	13.18
Unemployment rate	5.19	3.86	7.68	5.43
Labour force participation rate	60.12	63.35	52.65	57.69
% of people working part-time	28.97	25.17	31.02	30.05
% of single parent households	10.82	8.95	11.28	12.10
% people classified as educated professionals	20.86	18.36	19.13	19.98
% of high income households	10.31	8.99	6.42	10.32
% of low income households	22.32	22.56	29.25	22.35
% of people who had moved to a new statistical local area	23.34	21.35	22.64	22.44
Ratio of low income to high income	2.36	2.76	4.78	2.84
Level of industry specialisation (specialisation index)	0.29	0.34	0.29	0.33

Notes: Significant means indicated in bold.

Agricultural economies

The second sub-cluster that separates from the large group of general regional/rural economies represents the significant space occupied by agricultural regions. This cluster includes the functional economic regions of Griffith (New South Wales), Gannawarra (Victoria), Roma and Dalby (Queensland), South Eastern Western Australia and Gin Gin (Western Australia)

and Dorset and Circular Head (Tasmania). What separates membership in this cluster from membership in the previous general category and from the other general regional/rural economic zone sub-clusters relates to its engagement in agriculture. On average over one-quarter of employment is found in this industry sector. Reflecting this, the cluster also has an above average specialisation score, higher than the initial general cluster and higher than the other two sub-clusters. The remaining significant differences illustrate that this cluster has lower levels of employment in new economy industries, mass goods and services and mass recreation industries, and lower general disadvantage (non-working families, single parent families) and more positive labour market outcomes (relatively low unemployment and part-time employment and high labour force participation). Reflecting the higher concentration in agriculture, this cluster is differentiated from the other 2 by a higher industry specialisation score. Again, although not reported here fully, the 13 cluster outcome further divides this cluster into 2 smaller groups largely characterised by the level of population in-movement.

Sea-change/tree-change functions

The sea change-tree change retirement cluster comprises 23 functional economic regions that reflect the impacts of coastal and in-land migration of groups to what are often amenities based localities and areas that have become characterised by significant aging in place. Previously these locations have been referred to as welfare-retirement migration localities (Baum et al. 1999, 2005), tree change localities and sea change localities (Burnley and Murphy 2004). The functional economic regions in this cluster include Dubbo, North Western NSW and Central Darling (NSW), Hervey Bay, Gympie and Bundaberg (Qld), Copper Coast and Victor Harbour (SA), Burnie and West coast Tasmania (Tas), and East Gippsland (Vic). Population in-movement was not a differentiating factor which separated this cluster from the two comparison clusters. The main factors that separated this cluster from the service centre economies and the agricultural economies were age, labour force outcomes and socio-economic disadvantage. The cluster had the highest proportion of people aged 65 years and older (18.09 percent), being higher than any other cluster in the analysis. The cluster is also differentiated from the 2 other groups by its lower level of labour force participation and its relative high proportions of low income households, unemployment and non-working families.

5. DISCUSSION

This paper uses hierarchical cluster analysis and analysis of variance to present an analysis of Australia's functional economic regions. The research follows on from the earlier work conducted by researchers including Stimson et al. (2001), Beer et al. (1995) and Baum et al. (1999, 2005) and as with this earlier work, provides an illustration of the types social and economic outcomes that are being played out in regional, rural and remote Australia. The research presented here does however expand on this earlier work by moving away from

the use of spatial units based solely on administratively defined regions and instead makes use of newly developed functional economic regions. As such the research presented in this paper provides a first empirical look at these newly developed regions and provides insights into potential further research.

Clearly the patterns and subsequent discussion that is presented here is dependent on the exact typology building methodology and the data variables chosen. The combination of the methodology and the data at the very specific spatial scale of functional economic regions is exploratory. There could, for example, be considerable debate over the variables chosen and the exact clustering method used. It could be that other variables available in the census including the relatively new variables accounting for the rate of volunteering or computer access would add another dimension. It would have also been useful to consider several change variables in the analysis. While change in terms of population and employment has been a feature of previous analyses, the inclusion of change-over-time variables in this case was not possible. The fact that ABS time series census relates to location of enumeration, while the other data used in this analysis is based on usual place of residence meant that in many cases significant under or over estimation of change would occur. In terms of method several other clustering approaches have been used elsewhere and it may be that these would have yielded differing results.

Despite these caveats, the analysis presented does prove an interesting first look at the functional economic regions. What we have observed here is that the economies of regional, rural and remote Australia can be meaningfully divided along several lines representing mining, agriculture, regional and rural service centre functions, amenity and remote indigenous communities and centres. This in itself is not surprising and reflects many of the outcomes of the existing body of work. However the patterns observed do raise some interesting questions and issues not the least relating to the impact of using larger economic regions and what this might suggest for understanding regional and rural social and economic processes and development policies.

Clearly the spatial scale at which the analysis is undertaken is important. What we have not identified here that the earlier work of Stimson et al. (2001) and Baum et al. (1999, 2005) did, was the presence of significant 'regions' of socio-economic disadvantage and vulnerability. While we did identify areas akin to the welfare retirement migration localities in this earlier work we did not identify regions reflecting the 'dying' regional or rural communities that other have talked about. It is not that these communities do not exist, but rather that when the analysis turns to functional economic regions many of these disadvantaged localities are captured within a wider economic region. This of course raises issues of the existence of sponge cities, a phenomenon which has been widely debated in regional Australia (see Argent et al. 2008 for discussion). But the fact that in some cases areas that are in decline when considered at a small scale are in fact part of a wider regional or rural economy places an interesting level of debate in wider regional and rural policy and governance. The trick will be to understand what the relationships between places within these broader economies are and to understand the synergies which operate at

local and regional levels. Such questions will in turn require a different set of analytical techniques including specific case studies of selected areas and in-depth quantitative studies. The value of the analysis presented here is to inform these in-depth studies regarding the most appropriate case study regions.

On a related issue, it is also useful to consider that the broad spatial scale used here—functional economic regions—may only be one type of functional areas within particular regions. For instance, while the functional economic regions used here represent commuting patterns, it will be interesting to know how functional regions built up around social networks or patterns of production or consumption sit within these broader economic regions. The work of Smailes (2000) and others suggest that there may be a significant difference between the functional areas portrayed by purely economic activities such as commuting flows versus those portrayed by social flows. Understanding these differences will be an important further step in understanding the processes and operations of broad functional areas in a non-metropolitan context.

From a policy point of view the question of scale is also important. The analysis presented here, when combined with the rationale for creating the new functional economic regions (Mitchell 2008) may present a different take on where and how to target regional development. Earlier research by Stimson et al. (2001) and Baum (1999, 2005) argued that policy that was focused on both people and place may be important in helping declining country towns. What the analysis outlined here suggests is that any small scale place-based policy may need to take full account of the broader implications introduced by the presence of the broader economic and social contexts identified here. For instance, while a small scale job creation program may be warranted to help a declining small town, its position within a wider economic zone may mean that a different or broader approach may be called for. Again, understanding how policy will impact on different scales within the broader economic regions analysed here will be an important area that further research will uncover.

As an exploratory study, the value of this paper lays in the research questions it raises. What has been presented here simply produces a first cut understanding of the social and economic characteristics of the functional economic regions produced by Mitchell (2008). There are clearly many other avenues to explore, some of which have been identified above. Future papers will begin addressing many of these issues.

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APPENDIX: CONCORDANCE BETWEEN FUNCTIONAL ECONOMIC REGIONS AND STATISTICAL LOCAL AREAS

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area
Illawarra (NSW)	Kiama	Dubbo (NSW)	Dubbo (C) - Pt A	Broken Hill (NSW)	Broken Hill (C)
	Shellharbour		Dubbo (C) - Pt B		Central Darling (A)
	Wollongong - Inner		Gilgandra (A)		Unincorp. Far West
South Eastern NSW	Wollongong Bal Shoalhaven - Pt A	Narromine (A)	Warrumbungle Shire (A)	Eurobodalla (NSW)	Bega Valley (A)
	Shoalhaven - Pt B	Wellington (A)	Wellington (A)		Eurobodalla (A)
	Wingecarribee (A)	Bogan (A)	Bogan (A)	Cooma-Monaro (NSW)	Bombala (A)
	Goulburn	Coonamble (A)	Coonamble (A)		Cooma-Monaro (A)
	Mulwaree (A) - Goulburn	Warren (A)	Warren (A)		Snowy River (A)
Hunter (NSW)	Goulburn	Bourke (A)	Bourke (A)	Swan Hill (NSW/Vic)	Hay (A)
	Mulwaree (A) - Bal	Brewarrina (A)	Brewarrina (A)		Wakool (A)
	Upper Lachlan (A)	Mid-Western Regional (A) - Pt A	Mid-Western Regional (A) - Pt B	Bathurst-Orange (NSW)	Balranald (A)
	Cessnock (C)	Mid-Western Regional (A) - Pt B	Mid-Western Regional (A) - Pt B		Gannawarra (S)
	Lake Macquarie (C) - East	Cobar (A)	Cobar (A)		Swan Hill (RC) - Central
	Lake Macquarie (C) - North	Bland (A)	Bland (A)	Swan Hill (RC) - Robinvale	
	Lake Macquarie (C) - West	Cowra (A)	Cowra (A)	Swan Hill (RC) - Bal	
	Maitland (C)	Forbes (A)	Forbes (A)	Bathurst Regional (A) - Pt A	
	Newcastle (C) - Inner City	Lachlan (A)	Lachlan (A)	Bathurst Regional (A) - Pt B	
	Newcastle (C) - Outer West	Parkes (A)	Parkes (A)	Blayney (A)	
Newcastle (C) - Throsby	Weddin (A)	Weddin (A)	Cabonne (A)		
Port Stephens (A)	Harden (A)	Harden (A)	Oberon (A)		
Muswellbrook (NSW)	Dungog (A)	Young (A)	Young (A)	Greater Taree (NSW)	Orange (C)
	Singleton (A)	Cootamundra (A)	Cootamundra (A)		Gloucester (A)
	Muswellbrook (A)	Temora (A)	Temora (A)		Great Lakes (A)
	Upper Hunter Shire (A)				Greater Taree (C)

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area		
Wagga Wagga (NSW)	Wagga Wagga (C) - Pt A	Albury-Wodonga Murray border (NSW/Vic)	Lockhart (A)	Shepparton Murray border (NSW/Vic)	Corowa Shire (A)		
	Coolamon (A)		Albury (C)		Berrigan (A)		
	Gundagai (A)		Greater Hume Shire (A) - Pt A		Conargo (A)		
	Junee (A)		Greater Hume Shire (A) - Pt B		Deniliquin (A)		
	Tumut Shire (A)		Tumbarumba (A)		Murray (A)		
	Wagga Wagga (C) - Pt B		Urana (A)		Gr. Shepparton (C) - Pt A		
	Griffith (NSW)		Narrandera (A)		Benalla (RC) - Benalla	Campaspe (S) - Echuca	Campaspe (S) - Kyabram
			Carrathool (A)		Benalla (RC) Bal	Campaspe (S) - Rochester	Campaspe (S) - South
			Griffith (C)		Mansfield (S)	Gr. Shepparton (C) - Pt B East	Gr. Shepparton (C) - Pt B West
			Leeton (A)		Mount Buller Alpine Resort	Gr. Shepparton (C) - Pt B West	Moira (S) - East
Hastings (NSW)	Murrumbidgee (A)	Mount Stirling Alpine Resort	Moira (S) - West	Indigo (S) - Pt B			
	Jerilderie (A)	Indigo (S) - Pt A	Inverell (A) - Pt A				
Coffs Harbour (NSW)	Towong (S) - Pt A	Wodonga (RC)	Armidale-Northern NSW	Armidale			
	Gloucester (A)	Wangaratta (RC) - Central		Dumaresq- City			
	Great Lakes (A)	Wangaratta (RC) - North		Armidale			
	Greater Taree (C)	Wangaratta (RC) - South		Dumaresq Bal			
Tamworth (NSW)	Coffs Harbour (C) - Pt A	Alpine (S) - East		Glen Innes Severn (A)			
	Bellingen (A)	Alpine (S) - West		Guyra (A)			
	Clarence Valley - Coast	Towong (S) - Pt B		Inverell (A) - Pt B			
	Clarence Valley - Grafton	Falls Creek Alpine Resort		Uralla (A)			
	Clarence Valley (A) Bal	Mount Hotham Alpine Resort		Walcha (A)			
	Coffs Harbour (C) - Pt B	Gwydir (A)		Inglewood (S)			
Tamworth (NSW)	Tamworth Regional Part A & B	Moree Plains (A)					
	Gunnedah (A)	Goondiwindi (T)	Mildura (NSW/VIC)	Wentworth (A)			
	Liverpool Plains (A)	Waggamba (S)		Mildura (RC) - Pt A			
	Narrabri (A)	Balonne (S)		Mildura (RC) - Pt B			
	Walgett (A)						

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area
Lismore (NSW)	Lismore (C) - Pt A	Warrnambool (Vic)	Colac-Otway (S) - Colac	Central Highlands (Vic)	Golden Plains (S) - North-West
	Ballina (A)		Colac-Otway (S) - North		Ballarat (C) - Central
Byron (A)	Colac-Otway (S) - South		Ballarat (C) - Inner North		
Kyogle (A)	Warrnambool (C)		Ballarat (C) - North		
Lismore (C) - Pt B	Corangamite (S) - North		Ballarat (C) - South		
Richmond Valley - Casino	Corangamite (S) - South		Hepburn (S) - East		
Richmond Valley (A) Bal	Moyne (S) - North-East		Hepburn (S) - West		
Tenterfield (A)	Moyne (S) - North-West		Moorabool (S) - West		
Loddon (Vic)	N. Grampians (S) - St Arnaud		Moyne (S) - South		Pyrenees (S) - North
	Yarriambiack (S) - North		Barwon (Vic)		Pyrenees (S) - South
Buloke (S) - North	Bellarine - Inner				C. Goldfields - M'borough
Buloke (S) - South	Corio - Inner				C. Goldfields (S) Bal
Gr. Bendigo - Central	Geelong				Glenelg (S) - Heywood
Gr. Bendigo - Eaglehawk	Geelong West				Glenelg (S) - North
Gr. Bendigo - Inner East	Newtown				Glenelg (S) - Portland
Gr. Bendigo - Inner North	South Barwon - Inner	S. Grampians - Hamilton			
Gr. Bendigo - Inner West	Greater Geelong (C) - Pt B	S. Grampians - Wannon			
Gr. Bendigo (C) - S'saye	Queenscliffe (B)	S. Grampians Balance			
Gr. Bendigo (C) - Pt B	Surf Coast (S) - East	Brimbank (C) - Keilor			
Loddon (S) - North	Surf Coast (S) - West	Mitchell (Vic)			
Loddon (S) - South	Golden Plains (S) - South-East			Strathbogie (S)	
Mount Alexander - C'maine	Greater Geelong (C) - Pt C			Mitchell (S) - North	
East Gippsland (Vic)	Mount Alexander (S) Bal			E. Gippsland (S) - Bairnsdale	Mitchell (S) - South
				E. Gippsland (S) - Orbost	Murrindindi (S) - East
			E. Gippsland (S) - South-West	Murrindindi (S) - West	
			E. Gippsland (S) - Bal	Lake Mountain Alpine Resort	

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area
Gippsland (Vic)	Wellington (S) - Alberton	Gold Coast (cont) (Qld)	Ashmore-Benowa	Wimmera (Vic)	Ararat (RC)
	Wellington (S) - Avon		Carrara-Merrimac		Horsham (RC) - Central
	Wellington (S) - Maffra		Coomababah		Horsham (RC) Bal N. Grampians - Stawell
	Wellington (S) - Rosedale		Coolangatta		West Wimmera (S)
	Wellington (S) - Sale		Curumbin Valley-		Hindmarsh (S)
	Baw Baw (S) - Pt A		Tallebudgera		Yarriambiack - South
	Latrobe (C) - Moe		Curumbin Waters		Esk (S)
	Latrobe (C) - Morwell		Curumbin		
	Latrobe (C) - Traralgon		Elanora		Toowoomba Darling Downs (Qld)
	Latrobe (C) Bal		Helensvale		Gatton (S)
	Baw Baw (S) - Pt B East		Hope Island		Laidley (S)
	Baw Baw (S) - Pt B West		Kingsholme-		Cambooya (S) - Pt A
	Mount Baw Baw Alpine Resort		Upper Coomera		Crow's Nest (S) - Pt A
	Bass Coast (S) - Phillip Is.		Main Beach-		Jondaryan (S) - Pt A
	Bass Coast (S) Bal		South Stradbroke		Rosalie (S) - Pt A
	South Gippsland (S) - Central		Mermaid Wtrs-		Toowoomba (C) - Central
	South Gippsland (S) - East		Clear Is. Wtrs		Toowoomba (C) - North-East
	South Gippsland (S) - West		Miami		Toowoomba - North-West
	French Island		Molendinar		Toowoomba - South-East
	Tweed (A) - Tweed-Heads		Mudgeeraba-		Toowoomba (C) - West
	Tweed (A) - Tweed Coast		Reedy Creek		Cambooya (S) - Pt B
	Tweed (A) - Pt B		Nerang		Clifton (S)
	Biggera Waters-		Oxenford-		Crow's Nest (S) - Pt B
Labrador	Maudsland	Jondaryan (S) - Pt B			
Bilinga-Tugun	Pacific Pines-	Millmerran (S)			
Broadbeach-	Gaven	Pittsworth (S)			
Mermaid Beach	Palm Beach	Rosalie (S) - Pt B			
Broadbeach Waters	Paradise Point-				
Bundall	Runaway Bay				
Burleigh Heads	Parkwood-				
Burleigh Waters	Arundel				
	Pimpama-				
	Coomera				
	Southport				
	Surfers Paradise				
	Robina				
	Varsity Lakes				
	Worongary-Tallai				

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area
Sunshine Coast (Qld)	Caloundra (C) – Caloundra N.	Stanthorpe (Qld)	Stanthorpe (S)	Dalby (Qld)	Chinchilla (S)
	Caloundra (C) – Caloundra S.		Warwick (S) – Central		Dalby (T)
	Caloundra (C) – Kawana		Warwick (S) – East		Murilla (S)
	Maroochy (S) – Buderim		Warwick (S) – North		Tara (S)
	Maroochy (S) – Coastal North		Warwick (S) – West		Wambo (S)
	Maroochy (S) – Maroochydoore		Taroom (S)		Fitzroy (S) – Pt A
	Maroochy (S) – Mooloolaba		Bendemere (S)		Livingstone (S) – Pt A
	Maroochy (S) – Nambour		Bungil (S)		Rockhampton (C)
	Maroochy (S) – Paynter-Petrie Creek		Roma (T)		Bauhinia (S)
	Noosa (S) – Noosa-Noosaville		Warroo (S)		Duaringa (S)
	Noosa (S) – Sunshine-Peregian	Cherbourg (S)	Emerald (S)		
	Noosa (S) – Tewantin	Cooloola (S) (excl. Gympie)	Fitzroy (S) – Pt B		
	Caloundra (C) – Hinterland	Cooloola (S) – Gympie only	Livingstone (S) – Pt B		
	Caloundra (C) – Rail Corridor	Kilkivan (S)	Mount Morgan (S)		
	Maroochy (S) Bal	Kingaroy (S)	Peak Downs (S)		
	Noosa (S) Bal	Murgon (S)	Miriam Vale (S)		
	Booringa (S)	Nanango (S)	Calliope (S) – Pt A		
	Hervey Bay (C) – Pt A	Tiaro (S)	Gladstone (C)		
	Hervey Bay (C) – Pt B	Wondai (S)	Calliope (S) – Pt B		
	Maryborough (C)	Bundaberg (C)	Mackay (C) – Pt A		
	Woocoo (S)	Burnett (S) – Pt A	Belyando (S)		
	Banana (Qld)	Biggenden (S)	Burnett (S) – Pt B	Bowen (S)	
		Eidsvold (S)	Isis (S)	Broadsound (S)	
Gayndah (S)		Kolan (S)	Mackay (C) – Pt B		
Monto (S)		Perry (S)	Mirani (S)		
Mundubbera (S)		Bulloo (S)	Nebo (S)		
Banana (S)	Quilpie (S)	Sarina (S)			
Burdekin (Qld)	Woorabinda (S)	Kowanyama (S)	Whitsunday (S)		
	Burdekin	Carpentaria (S)			
		South West Qld			
		Carpentaria (Qld)			

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	
Central West QLD	Murweh (S)	Townsville (Qld)	Aitkenvale	Weipa (Qld)	Aurukun (S)	
	Paroo (S)		City		Cook (S)	
Charters Towers (Qld)	Jericho (S)	Cranbrook			Hope Vale (S)	
	Barcardine (S)	Currajong			Lockhart River (S)	
	Barcoo (S)	Douglas			Napranum (S)	
	Blackall (S)	Garbutt			Porpuraaw (S)	
	Ilfracombe (S)	Gulliver			Weipa (T)	
Cairns (Qld)	Isisford (S)	Heatley		Far North Qld		
	Longreach (S)	Hermit Park				
	Tambo (S)	Hyde Park-				Badu (IC)
	Winton (S)	Mysterion				Bamaga (IC)
	Aramac (S)	Magnetic Island				Boigu (IC)
	Charters Towers (C)	Mt Louisa-Mt St John-Bohle				Dauan (IC)
	Dalrymple (S)	Mundingburra				Erub (IC)
	Croydon (S)	Murray				Hammond (IC)
	Etheridge (S)	North Ward-Castle Hill				Iama (IC)
	Flinders (S)	Oonoonba-Idalia-Cluden				Injinoo (S)
Richmond (S)	Pallarenda-Shelley Beach			Kubin (IC)		
Cairns © – Barron	Pimlico			Mabuiag (IC)		
Cairns © – Central Suburbs	Railway Estate			Mapoon (S)		
Cairns © – City	Rosslea			New Mapoon (S)		
Cairns © – Mt Whitfield	Rowes Bay-Belgian Gardens			Poruma (IC)		
Cairns © – Northern Suburbs	South Townsville			Saibai (IC)		
Cairns © – Trinity	Stuart-Roseneath			St Pauls (IC)		
Cairns © – Western Suburbs	Vincent			Seisia (IC)		
Atherton (S)	West End			Torres (S)		
Cairns © – Pt B	Wulguru			Umagico (S)		
Cardwell (S)	Kelso			Warraber (IC)		
Douglas (S)	Kirwan			Yorke (IC)		
Eacham (S)	Thuringowa (C) - Pt A Bal			Burke (S)		
Herberton (S)	Palm Island (S)			Cloncurry (S)		
Johnstone (S)	Thuringowa (C) - Pt B			Doomadgee (S)		
Mareeba (S)	Townsville (C) - Pt B			McKinlay (S)		
Wujal Wujal (S)	Hinchinbrook			Mornington (S)		
Yarrabah (S)				Mount Isa ©		
		Hinchinbrook (Qld)				
				Mount Isa-North West Qld		

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area
Adelaide Hills-Murray Lands (SA)	Adelaide Hills (DC) - Central Adelaide Hills (DC) - Ranges Adelaide Hills (DC) - North Adelaide Hills (DC) Bal Mount Barker (DC) - Central Mount Barker (DC) Bal Alexandrina (DC) - Strathalbyn Loxton Waikerie (DC) - West	Victor Harbour-Alexandrina (SA)	Alexandrina (DC) - Coastal	Barossa (SA)	Gawler (T)
			Victor Harbor (C)		Barossa (DC) – Angaston Barossa (DC) – Barossa Barossa (DC) – Tanunda Light (RegC)
			Yankalilla (DC)		Mallala (DC)
			Berri & Barmera (DC) - Barmera Berri & Barmera - Berri Loxton Waikerie - East Renmark Paringa - Paringa Renmark Paringa - Renmark Unincorp. Riverland		Clare and Gilbert Valleys (DC) Goyder (DC)
			Cleve (DC)		Wakefield (DC)
			Elliston (DC) Franklin Harbour (DC)		Barunga West (DC) Copper Coast (DC)
			Kimba (DC)		Yorke Peninsula (DC) – North Yorke Peninsula (DC) – South Ceduna (DC)
			Le Hunte (DC)		Unincorp. West Coast
			Unincorp. Lincoln		Lower Eyre Peninsula (DC) Port Lincoln (C)
			Streaky Bay (DC)		Tumby Bay (DC)
Northern SA	Peterborough (DC) Port Pirie C Dists (M) - City Port Pirie C Dists (M) Bal	SA Riverlands	Whyalla (C) Unincorp. Whyalla Kingston (DC)	Lower Eyre Peninsula (SA)	Tatiara (DC)
	Unincorp. Pirie Flinders Ranges (DC) Mount Remarkable (DC)		Naracoorte and Lucindale (DC) Robe (DC)		Grant (DC)
			Naracoorte and Lucindale (DC) Robe (DC)		Mount Gambier (C) Wattle Range (DC) - East Wattle Range (DC) - West
			Cooper Pedy (DC) Roxby Downs (M) Unincorp. Far North		
Kangaroo Island (SA)	Kangaroo Island	Eyre (SA)		Copper Coast (SA)	

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	
Pilbara (WA)	Port Hedland (T) Ashburton (S) Roebourne (S)	Lower great southern (WA)	Boddington (S) Broomehill (S) Gnowangerup (S)	Midlands (WA)	Victoria Plains (S) Cunderdin (S) Dowerin (S) Goomalling (S)	
South East WA	Laverton (S) Menzies (S)		Jerramungup (S) Katanning (S)		Koorda (S) Northam (T)	
Albany (WA)	Albany (C) - Central Albany (C) Bal Cranbrook (S) Denmark (S)		Kent (S) Kojonup (S) Tambellup (S) Woodanilling (S)		Northam (S) Tammin (S) Toodyay (S) Wongan-Ballidu (S)	
GinGin (WA)	Plantagenet (S) Chittering (S) Dandaragan (S) Gingin (S) Moorabool (S) Dalwallinu (S)		Brookton (S) Cuballing (S) Dumbleyung (S) Narrogin (T) Narrogin (S) Pingelly (S)		Wyalkatchem (S) York (S) Bruce Rock (S) Kellerberrin (S) Merredin (S) Mount Marshall (S)	
Central WA	Carnamah (S) Coorow (S) Irwin (S) Mingenew (S) Morawa (S) Perenjori (S) Three Springs (S) Geraldton (C) Greenough (S) - Pt A Shark Bay (S) Cue (S) Mount Magnet (S) Murchison (S)		Wagin (S) Wandering (S) West Arthur (S) Wickepin (S) Williams (S) Corrigin (S) Kondinin (S) Kulin (S)		Yilgarn (S) Dundas (S)	
	Yalgoo (S) Chapman Valley (S) Greenough (S) - Pt B Mullewa (S)		Lake Grace (S) Beverley (S) Quairading (S)		Esperance (S) Ravensthorpe (S) Kalgoorlie/Boulder	
	Northampton (S)		Bunbury (C) Capel (S) - Pt A Dardanup (S) - Pt A		Kalgoorlie/Boulder (WA)	
	Busselton-Margaret River (WA)		Augusta-Margaret River Busselton (S)		Harvey (S) - Pt A Capel (S) - Pt B Collie (S) Dardanup (S) - Pt B	Carnarvon (WA) Carnarvon (S)
					Donnybrook-Balingup (S) Harvey (S) - Pt B Waroona (S) Boyup Brook (S) Bridgetown-Greenbushes (S) Manjimup (S) Nannup (S)	Exmouth (S) Upper Gascoyne (S)

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	
Mersey-Lyell (TAS)	Central Coast (M) - Pt A	Burnie (TAS)	Burnie (C) - Pt A	Northern TAS	George Town (M) - Pt A	
	Devonport (C)		Waratah/Wynyard - Pt A		Launceston (C) - Inner	
	Latrobe (M) - Pt A		Burnie (C) - Pt B		Launceston (C) - Pt B	
	Central Coast (M) - Pt B		Waratah/Wynyard - Pt B		Meander Valley - Pt A	
West coast (TAS)	Kentish (M)	Break O'Day (TAS)	Glamorgan/Spring Bay	Katherine (NT)	Northern Midlands - Pt A	
	Latrobe (M) - Pt B		Break O'Day (M)		West Tamar (M) - Pt A	
	West Coast (M)		Meander Valley - Pt B		George Town (M) - Pt B	
Circular Head (TAS)	Circular Head	Dorset (TAS)	Dorset	Petermann-Simpson (NT)	Launceston (C) - Pt C	
	King Island		Flinders		Northern Midlands (M) - Pt B	
King Island (TAS)	King Island	Flinders (TAS)	Flinders	Groote Eylandt (NT)	West Tamar (M) - Pt B	
	Alice Springs (T) - Charles		Tanami (NT)		Tanami	Binjari (CGC)
	Alice Springs (T) - Heavitree				Yuendumu (CGC)	Elsley
	Alice Springs (T) - Larapinta				Daly (NT)	Cox-Finiss
Alice Springs (T) - Ross	Cox Peninsula (CGC)	Katherine (T)				
Alice Springs (NT)	Alice Springs (T) - Stuart	Daly (NT)	Daly	East Arnhem (NT)	Mataranka (CGC)	
	Arltarlpilta (CGC)		Nauiyu Nambiyu (CGC)		Nyirranggulong	
	Sandover		Pine Creek (CGC)		Mardruk	
	Elliott District (CGC)		Borroloola (CGC)		Ngadberre	
Tennant Creek (NT)	Tableland	Borroloola (NT)	Gulf	Petermann-Simpson (NT)	Yugul Mangi (CGC)	
	Tennant Creek (T)		Daguragu (CGC)		Petermann-Simpson	
	Tennant Creek - Bal		Lajamanu (CGC)		Angurugu (CGC)	
Ltyentye Purte (NT)	Ltyentye Purte	Daguragu (NT)	Timber Creek (CGC)	Groote Eylandt (NT)	Groote Eylandt	
	Anmatjere (CGC) Hanson		Walangeri Ngumpinku (NT)		Victoria Walangeri Ngumpinku	East Arnhem (NT)
Anmatjere (NT)	Hanson	Thamarrurr (NT)	Thamarrurr	Tiwi Islands (NT)	East Arnhem - Bal	
	Tapatjatjaka		Jabiru (NT)		Jabiru (T) South Alligator	Kunbarllanjja (NT)
Tapatjatjaka (NT)	Tapatjatjaka	Jabiru (NT)		Jabiru (T) South Alligator	West Arnhem (NT)	
					Kunbarllanjja	
					West Arnhem	