SOCIO-ECONOMIC PERFORMANCE ACROSS AUSTRALIA'S NON-METROPOLITAN FUNCTIONAL ECONOMIC REGIONS[12]

Scott Baum
Associate Professor, Urban Research Program, Griffith University, Nathan QLD 4111.

William Mitchell
Professor and Director, Centre of Full Employment and Equity, University of Newcastle, Callaghan NSW 2308.

Jung Hoon Han
Research Fellow, Urban Research Program, Griffith University, Nathan QLD 4111.

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

[1] The research conducted in this paper was part of an Australian Research Council Discovery project (DP0879382) A society divided: A multilevel approach for understanding socio-economic opportunity and vulnerability.

[2] This paper was presented at the 32nd ANZRSAI Conference held in Adelaide from 30th Nov – 3rd Dec 2008, where it received the best paper of the conference award.

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 by 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) loosing 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 tuse 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.

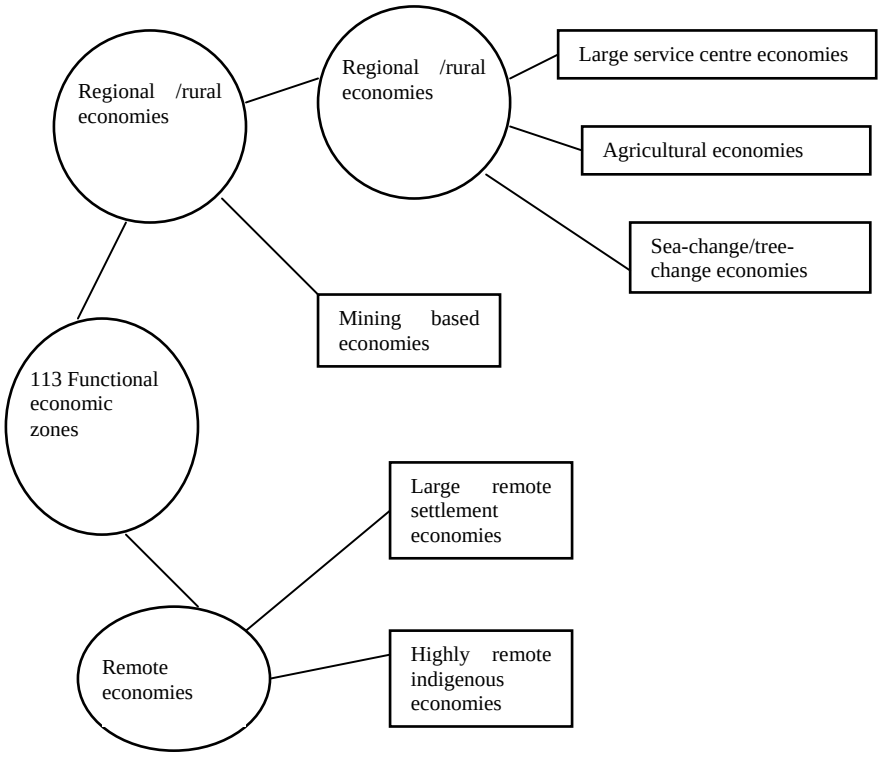


Figure 1. Cluster Map

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.

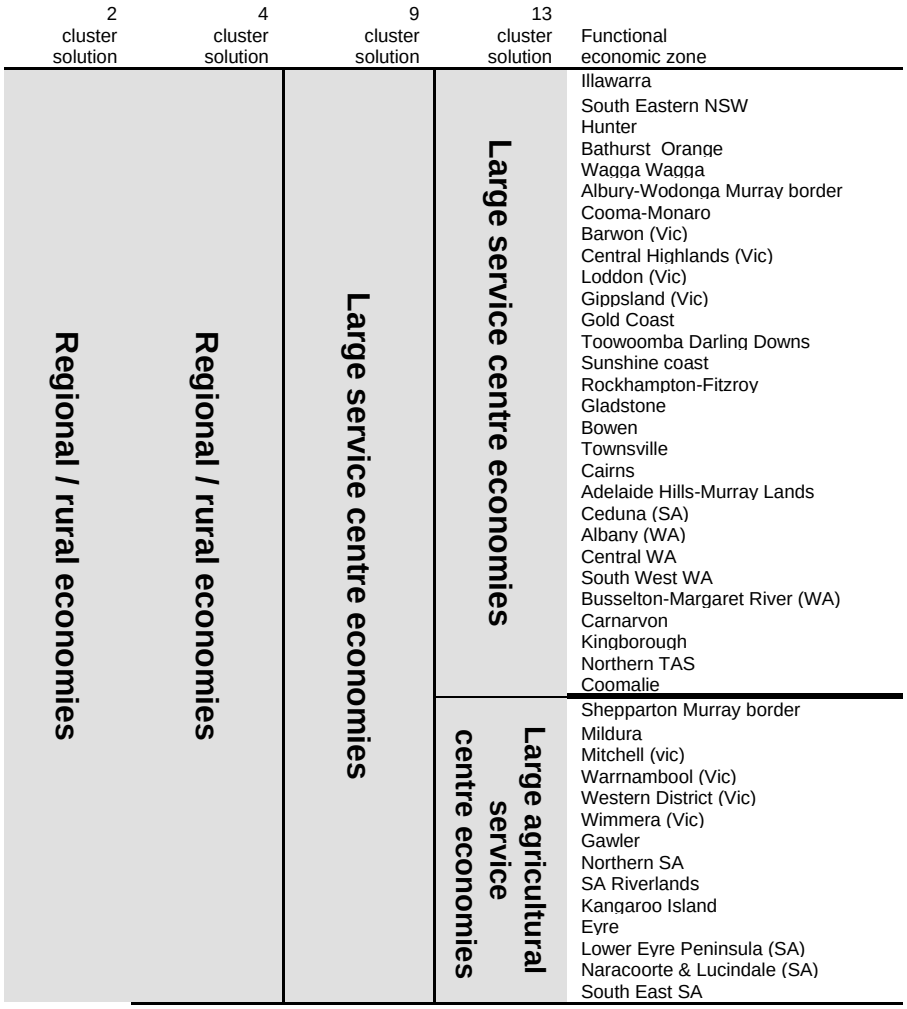


Figure 2 Continued.

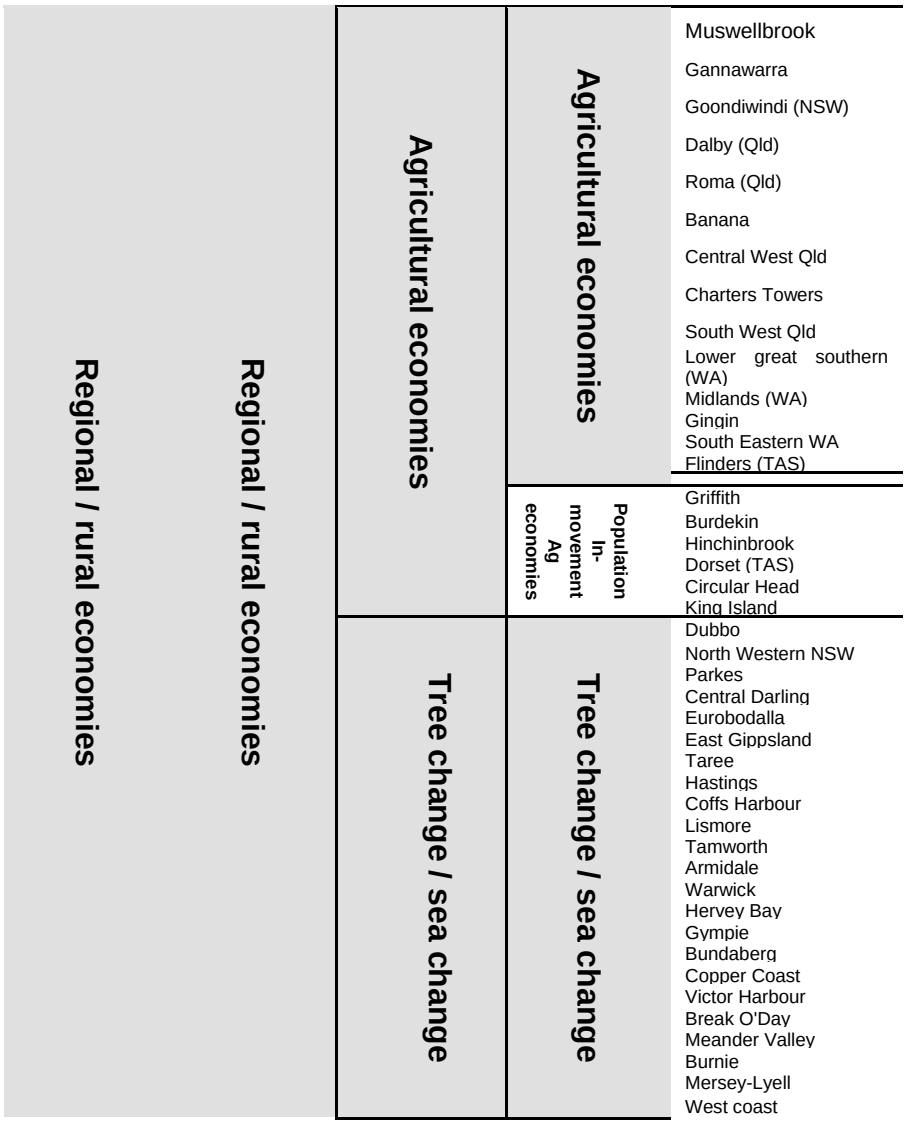
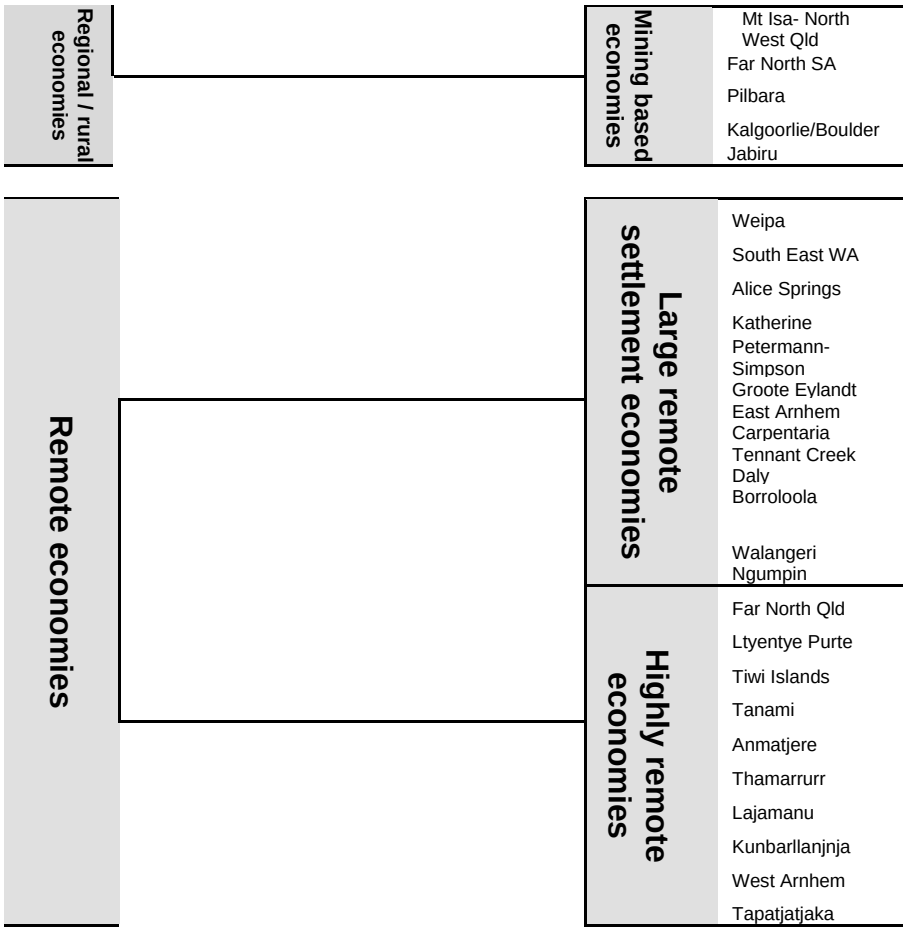


Figure 2 Continued.



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.

REFERENCES

Aldenderfer, M. and Blashfield, R. (1984) *Cluster Analysis*, Sage Publications, Beverly Hills.

Anderson, J. (1999) *One Nation or Two? Securing a Future for Rural and Regional Australia*, Address to the National Press Club, 17 February.

Argent, N. (2002) 'rom pillar to post? In search of the post-productivist countryside in Australia. *Australian Geographer*, 33, pp. 97-114.

Argent, N., Rolley, F. and Walmsley, J. (2008) The Sponge City Hypothesis: does it hold water? *Australian Geographer*, 39(2), pp. 109-130.

Baum, S., Stimson, R., O'Connor, K., Mullins, P. and Davis, R. (1999) *Community Opportunity and Vulnerability in Australia's Cities and Towns: Characteristics, Patters and Implications*, University of Queensland Press, for the Australian Housing and Urban Research Institute, Brisbane.

Baum, S. and O'Connor, K. (2005) Regional population and employment change in Australia 1991-2001: Inertia in the face of rapid change. *GeoJournal*, 62, pp. 85-94.

Baum, S., O'Connor, K. and Stimson, R. (2005) *Fault Lines Exposed: Advantage and Disadvantage across Australia's Settlement System*, Monash University e-Press: Melbourne.

Beer, A. (1999) *Regional Cities within Australia's Evolving Urban System, 1991-96*, Paper presented to the 16th Pacific Regional Science Association conference, Seoul, July.

Beer, A., Bolam, A. and Maude, A. (1994) *Beyond the Capitals: Urban Growth in Regional Australia*. Australian Government Publishing Service: Canberra.

Beer, A. and Maude, A. (1995) Regional cities within the Australian urban system, 1961 to 1991. *Urban Policy and Research*, 13, pp. 135-148.

Beer, A., Maude, A. & Pritchard, B. (2003) *Developing Australia's Regions: Theory and Practice*. University of New South Wales Press,:Sydney.

Berry B (1996) Technology-sensitive urban typology. *Urban Geography*, 17(8), pp. 674-689

Birrell, B. and O'Connor, K. (2000) Regional Australia and the new economy. *People and Place*, 8, pp. 52-62.

Blainey, G. (2001) *The Great Divide*, Boyer Lectures, Program three, Australian Broadcasting Corporation Transcripts.

Bureau of Transport Economics (2004) *Focus on Regions, No. 1: Industry Structure*, Information paper 49, BTRE, Department of Transport and Regional Services: Canberra

Burnley, I. and Murphy, P. (2002) Change, continuity or cycles: the population turnaround in NSW. *Journal of Population Research*, 19, pp. 137-154.

Burnley, I. and Murphy, P. (2004) *Sea Change: Movement from Metropolitan to Arcadian Australia.* UNSW Press: Sydney.

Collits, P. (2004) Policies for the future of regional Australia. *European Planning Studies*, 12, pp. 85-97.

Conway, K. (1995) Can rural communities survive? The case of Hopetoun. *People and Place*, pp. 11–16.

Coulton, C., Chow, J., Wang, E. and Su, M. (1996) Geographical concentration of affluence and poverty in 100 metropolitan areas, 1990. *Urban Affairs Review*, 32(2), pp. 186-216.

Dixon R. Shepard, D. and Thomson, J. (2001) Regional unemployment disparities in Australia. *Regional Studies*, 35, pp. 93-102.

Everitt, B. (1993) *Cluster Analysis*, 3rd edn, Halsted Press: New York.

Fraley C. and Raftery A. (1998) How many clusters? Which clustering method? Answers via model-based cluster analysis. *The Computer Journal*, 41, pp. 578-588.

Fraley C. and Raftery A. (2002) Model based clustering, discriminant analysis and density estimation. *Journal of the American Statistical Association*, June, 97, pp. 611-631.

Garnaut, J., Connell, P., Lindsay, R. & Rodriguez, V. (2001) *Country Australia: Influences on Employment and Population Growth*, ABARE Research Report, 20001.1: Canberra.

Gittleman, M. & Howell, D. (1995) Changes in the structure and quality of jobs in the United States: Effects by race and gender, 1973-1990. *Industrial and Labour Relations Review*, 48, pp.420-440.

Gow, J. (1994) Farm structural adjustment – an everyday imperative, incorporating comments on Lawrence. *Rural Society*, 4, pp. 9–13.

Gray, I., Lawrence, G. and Dunn, A. (1993) *Coping with Change: Australian Farmers in the 1990*s. Centre for Rural Social Research: Wagga Wagga.

Gray, I. & Lawrence G. (2001) *A Future for Regional Australia: Escaping Global Misfortune*, Cambridge University Press: Cambridge.

Hair, J., Anderson R. and Tatham, R. (1987) *Multivariate Data Analysis with Readings*, Macmillan Publishing, New York

Hill, E., Brennan, J. and Wolman, H. (1998) What is central city in the Unites States? Applying a statistical technique for developing taxonomies. *Urban Studies*, 35, pp. 1935-1969.

Hugo, G. (2001) What is really happening in rural and regional populations? In M. Rodgers & Y. Collins (eds) *The Future of Australia's Country Towns*, Centre for Sustainable Regional Communities, La Trobe University: Bendigo.

Hugo, G. and Bell, M. (1998) The hypothesis of welfare-led migration to rural areas: the Australian case. In P. Boyle and K. Halfacree (eds) *Migration into Rural Areas: Theories and Issues*, Wiley, New York, pp. 107-133.

Joseph, A.E., Lidgard, J.M. and R. Bedford (2001) Dealing with ambiguity: on the interdependence of change in agricultural and rural communities. *New Zealand Geographer*, 57, pp. 16-26.

Lawson, J. and Dwyer, J. (2002) *Labour Market Adjustment in Regional Australia*, Reserve Bank of Australia, Research Discussion Paper 2002-04.

Lloyd, R., Harding, A. and Hellwig, O. (2000) Regional Divide? A Study of Incomes in Regional Australia. *Australasian Journal of Regional Studies*, 6, pp.217-292.

Massey, D. and Eggers, M. (1993) The spatial concentration of affluence and poverty during the 1970s. *Urban Affairs Quarterly*, 29(2), pp. 299-315.

Masson, M. and Loftus, G. (2003) Using confidence intervals for graphically based data interpretation. *Canadian Journal of Experimental Psychology*, 57, pp. 203-220.

Maude, A. (2004) Regional development processes and policies in Australia: A review of research 1990-2002. *European Planning Studies*, 12, pp. 3-26.

Mikelbank, B. (2004) A typology of U.S. suburban places, *Housing Policy Debate*, 15(4), pp. 935-964.

Mitchell, W. (2008) CofFEE Functional Economic Regions. Paper presented at the ARCNSISS Tools and Techniques Workshop, Newcastle,

Mullins, P. (1991) Tourism urbanisation. *International Journal of Urban and Regional Research*, 15, pp. 326–342.

Mullins, P. (1995) Progress associations and urban development: The Gold Coast, 1945-79. *Urban Policy and Research*, 13, pp. 6-19.

O'Connor K. and Kershaw, L. (1999) Outsourcing, producer services and shifts in the geography of the Australian mining industry. *Australasian Journal of Regional Studies*, 5, pp. 83.

Pritchard, B. and McManus, P. (eds) (2000) *Land of Discontent: The Dynamics of Change in Rural and Regional Australia*, University of New South Wales Press: Sydney.

Productivity Commission (1998) *Aspects of Structural Change in Australia*, Research Report. Ausinfo: Canberra.

Prosser, G. (2000) *The Significance of Regional Tourism: A Preliminary Report*, Occasional paper no. 2, Bureau of Tourism Research: Canberra.

Salt, B. (2001) *The Big Shift: Welcome to the Third Australian Culture*, Hardie Grant Books: South Yarra.

Salma, U. (2002) Indirect economic contribution of tourism, 1997-98. *Tourism Research Report*, 4, pp. 59-61.

SERC (2002) *Assessing Community Strength: A Proposed Set of Indicators and Measures*. Report for the Department of Family and Community Services, Social and Economic Research Centre, University of Queensland: Brisbane.

Smailes, P.J. (2000) The Diverging Geographies of Social and Business Interaction Patterns: A Case Study of Rural South Australia. *Australian Geographical Studies*, 38, 2, 158-179.

Smailes, P. (2002) From rural dilution to multifunctional countryside: some pointers to the future from South Australia. *Australian Geographer* 33, pp. 79-95.

Smith, R.H.T. (1965a), The functions of Australian towns. *Tijdschrift voor Economische en Sociale Geografie*, 50, pp. 81–92.

Smith R. H. T. (1965b) Method and purpose in functional town classification. *Annals of the American Association of Geographers*, September, pp. 539-548

Sorenson, T. (1992) *The Australian Country Town: Present Trends and Future Prospects*. Keynote address to the Australian and New Zealand Regional Science Association, Ballarat, December 7.

Sorensen, T. (2000) *Regional Development: some Issues for Policy Makers*, Parliament of Australia, Parliamentary Library, Research Paper 26, 1999-2000.

Stayner, R. and Reeves, I. (1990) *Uncoupling': Relationships between Agriculture and the Local Economies of Rural Areas in New South Wales*. Rural Development Centre, University of New England: Armidale.

Storey, K. (2001) Fly-in/fly-out and fly-over: mining and regional development in Western Australia. *Australian Geographer*, 32, pp. 133-148.

Stimson, R. (2001) Dividing societies: the socio-spatial implications of restructuring in Australia. *Australian Geographical Studies*, 39, pp. 198-216.

Stimson, R., Shuaib, F. and O'Connor, K. (1998) *Population and employment in Australia: Regional Hot Spots and Cold Spots, 1986 to 1996*. Australian Housing and Urban Research Institute: Melbourne.

Stimson, R., Baum, S., Mullins, P. and O'Connor, K. (2001) Australia's regional cities and towns: Modelling community opportunity and vulnerability. *Australasian Journal of Regional Studies*, 7, pp.23-62.

Stimson, R., Stough, R. and Roberts, B. (2002) *Regional Economic Development: Analysis and Planning Strategy*. Springer: Berlin.

Theodorson, G. (1982) (ed) *Urban Patterns: Studies in Human Ecology, Revised Edition.* The Pennsylvania State University Press: University Park.

Western, J., Stimson, R., Baum, S. & Van Gellecum, Y. Measuring Community Strength and Social Capital. *Regional Studies*, 39, pp. 1095-1109.

APPENDIX: CONCORDANCE BETWEEN FUNCTIONAL ECONOMIC REGIONS AND STATISTICAL LOCAL AREAS

Functional Economic Zone	Statistical local area
Illawarra (NSW)	Kiama
	Shellharbour
	Wollongong - Inner
	Wollongong Bal
	Shoalhaven - Pt A
	Shoalhaven - Pt B
South Eastern NSW	Wingecarribee (A)
	Goulburn Mulwaree (A) - Goulburn
	Goulburn Mulwaree (A) Bal
	Upper Lachlan (A)
Hunter (NSW)	Cessnock (C)
	Lake Macquarie (C) - East
	Lake Macquarie (C) - North
	Lake Macquarie (C) - West
	Maitland (C)
	Newcastle (C) - Inner City
	Newcastle (C) - Outer West
	Newcastle (C) - Throsby
	Port Stephens (A)
	Dungog (A)
	Singleton (A)
Muswellbrook (NSW)	Muswellbrook (A)
	Upper Hunter Shire (A)

Functional Economic Zone	Statistical local area
Dubbo (NSW)	Dubbo (C) - Pt A
	Dubbo (C) - Pt B
	Gilgandra (A)
	Narromine (A)
	Warrumbungle Shire (A)
	Wellington (A)
	Bogan (A)
	Coonamble (A)
	Warren (A)
	Bourke (A)
	Brewarrina (A)
North Western NSW	Mid-Western Regional (A) - Pt A
	Mid-Western Regional (A) - Pt B
Parkes (NSW)	Cobar (A)
	Bland (A)
	Cowra (A)
	Forbes (A)
	Lachlan (A)
	Parkes (A)
	Weddin (A)
	Harden (A)
	Young (A)
	Cootamundra (A)
	Temora (A)

Functional Economic Zone	Statistical local area
Broken Hil (NSW)l	Broken Hill (C)
	Central Darling (A)
	Unincorp. Far West
Eurobodalla (NSW)	Bega Valley (A)
	Eurobodalla (A)
Cooma-Monaro (NSW)	Bombala (A)
	Cooma-Monaro (A)
	Snowy River (A)
Swan Hill (NSW/Vic)	Hay (A)
	Wakool (A)
	Balranald (A)
	Gannawarra (S)
	Swan Hill (RC) - Central
	Swan Hill (RC) - Robinvale
	Swan Hill (RC) Bal
Bathurst-Orange (NSW)	Bathurst Regional (A) - Pt A
	Bathurst Regional (A) - Pt B
	Blayney (A)
	Cabonne (A)
	Oberon (A)
	Orange (C)
Greater Taree (NSW)	Gloucester (A)
	Great Lakes (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
	Carrathool (A)		Benalla (RC) Bal		Campaspe (S) - Kyabram
	Griffith (C)		Mansfield (S)		Campaspe (S) - Rochester
	Leeton (A)		Mount Buller Alpine Resort		Campaspe (S) - South
	Murrumbidgee (A)		Mount Stirling Alpine Resort		Gr. Shepparton (C) - Pt B East
	Jerilderie (A)		Indigo (S) - Pt A		Gr. Shepparton (C) - Pt B West
Hastings (NSW)	Gloucester (A)		Towong (S) - Pt A		Moira (S) - East
	Great Lakes (A)		Wodonga (RC)		Moira (S) - West
	Greater Taree (C)		Wangaratta (RC) - Central		Indigo (S) - Pt B
Coffs Harbour (NSW)	Coffs Harbour (C) - Pt A		Wangaratta (RC) - North	**Armidale-Northern NSW**	Inverell (A) - Pt A
	Bellingen (A)		Wangaratta (RC) - South		Armidale Dumaresq- City
	Clarence Valley - Coast		Alpine (S) - East		Armidale Dumaresq Bal
	Clarence Valley - Grafton		Alpine (S) - West		Glen Innes Severn (A)
	Clarence Valley (A) Bal		Towong (S) - Pt B		Guyra (A)
	Coffs Harbour (C) - Pt B		Falls Creek Alpine Resort		Inverell (A) - Pt B
	Tamworth				Uralla (A)
Tamworth (NSW)	Regional Part A & B		Mount Hotham Alpine Resort		
	Gunnedah (A)	**Goondiwindi (NSW)**	Gwydir (A)		Walcha (A)
	Liverpool Plains (A)		Moree Plains (A)		Inglewood (S)
	Narrabri (A)		Goondiwindi (T)	**Mildura (NSW/VIC)**	Wentworth (A)
	Walgett (A)		Waggamba (S)		Mildura (RC) - Pt A
			Balonne (S)		Mildura (RC) - Pt B

Functional Economic Zone	Statistical local area
Lismore (NSW)	Lismore (C) - Pt A
	Ballina (A)
	Byron (A)
	Kyogle (A)
	Lismore (C) - Pt B
	Richmond Valley - Casino
	Richmond Valley (A) Bal
	Tenterfield (A)
Loddon (Vic)	N. Grampians (S) - St Arnaud
	Yarriambiack (S) - North
	Buloke (S) - North
	Buloke (S) - South
	Gr. Bendigo - Central
	Gr. Bendigo - Eaglehawk
	Gr. Bendigo - Inner East
	Gr. Bendigo - Inner North
	Gr. Bendigo - Inner West
	Gr. Bendigo (C) - S'saye
	Gr. Bendigo (C) - Pt B
	Loddon (S) - North
	Loddon (S) - South
	Mount Alexander - C'maine
	Mount Alexander (S) Bal

Functional Economic Zone	Statistical local area
Warrnambool (Vic)	Colac-Otway (S) - Colac
	Colac-Otway (S) - North
	Colac-Otway (S) - South
	Warrnambool (C)
	Corangamite (S) - North
	Corangamite (S) - South
	Moyne (S) - North-East
	Moyne (S) - North-West
	Moyne (S) - South
Barwon (Vic)	Bellarine - Inner
	Corio - Inner
	Geelong
	Geelong West
	Newtown
	South Barwon - Inner
	Greater Geelong (C) - Pt B
	Queenscliffe (B)
	Surf Coast (S) - East
	Surf Coast (S) - West
	Golden Plains (S) - South-East
	Greater Geelong (C) - Pt C
East Gippsland (Vic)	E. Gippsland (S) - Bairnsdale
	E. Gippsland (S) - Orbost
	E. Gippsland (S) - South-West
	E. Gippsland (S) Bal

Functional Economic Zone	Statistical local area
Central Highlands (Vic)	Golden Plains (S) - North-West
	Ballarat (C) - Central
	Ballarat (C) - Inner North
	Ballarat (C) - North
	Ballarat (C) - South
	Hepburn (S) - East
	Hepburn (S) - West
	Moorabool (S) - West
	Pyrenees (S) - North
	Pyrenees (S) - South
	C. Goldfields - M'borough
	C. Goldfields (S) Bal
Western District (Vic)	Glenelg (S) - Heywood
	Glenelg (S) - North
	Glenelg (S) - Portland
	S. Grampians - Hamilton
	S. Grampians - Wannon
	S. Grampians Balance
Mitchell (Vic)	Brimbank (C) - Keilor
	Strathbogie (S)
	Mitchell (S) - North
	Mitchell (S) - South
	Murrindindi (S) - East
	Murrindindi (S) - West
	Lake Mountain Alpine Resort

Functional Economic Zone	Statistical local area
Gippsland (Vic)	Wellington (S) - Alberton
	Wellington (S) - Avon
	Wellington (S) - Maffra
	Wellington (S) - Rosedale
	Wellington (S) - Sale
	Baw Baw (S) - Pt A
	Latrobe (C) - Moe
	Latrobe (C) - Morwell
	Latrobe (C) - Traralgon
	Latrobe (C) Bal
	Baw Baw (S) - Pt B East
	Baw Baw (S) - Pt B West
	Mount Baw Baw Alpine Resort
	Bass Coast (S) - Phillip Is.
	Bass Coast (S) Bal
	South Gippsland (S) - Central
	South Gippsland (S) - East
	South Gippsland (S) - West
	French Island
Gold Coast (Qld)	Tweed (A) - Tweed-Heads
	Tweed (A) - Tweed Coast
	Tweed (A) - Pt B
	Biggera Waters-Labrador
	Bilinga-Tugun
	Broadbeach-Mermaid Beach
	Broadbeach Waters
	Bundall
	Burleigh Heads
	Burleigh Waters

Functional Economic Zone	Statistical local area
Gold Coast (cont) (Qld)	Ashmore-Benowa
	Carrara-Merrimac
	Coombabah
	Coolangatta
	Currumbin Valley-Tallebudgera
	Currumbin Waters
	Currumbin
	Elanora
	Helensvale
	Hope Island
	Kingsholme-Upper Coomera
	Main Beach-South Stradbroke
	Mermaid Wtrs-Clear Is. Wtrs
	Miami
	Molendinar
	Mudgeeraba-Reedy Creek
	Nerang
	Oxenford-Maudsland
	Pacific Pines-Gaven
	Palm Beach
	Paradise Point-Runaway Bay
	Parkwood-Arundel
	Pimpama-Coomera
	Southport
	Surfers Paradise
	Robina
	Varsity Lakes
	Worongary-Tallai

Functional Economic Zone	Statistical local area
Wimmera (Vic)	Ararat (RC)
	Horsham (RC) - Central
	Horsham (RC) Bal
	N. Grampians - Stawell
	West Wimmera (S)
	Hindmarsh (S)
	Yarriambiack - South
Toowoomba Darling Downs (Qld)	Esk (S)
	Gatton (S)
	Laidley (S)
	Cambooya (S) - Pt A
	Crow's Nest (S) - Pt A
	Jondaryan (S) - Pt A
	Rosalie (S) - Pt A
	Toowoomba (C) - Central
	Toowoomba (C) - North-East
	Toowoomba - North-West
	Toowoomba - South-East
	Toowoomba (C) - West
	Cambooya (S) - Pt B
	Clifton (S)
	Crow's Nest (S) - Pt B
	Jondaryan (S) - Pt B
	Millmerran (S)
	Pittsworth (S)
	Rosalie (S) - Pt B

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

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

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
	Mid Murray (DC)
	Karoonda East Murray (DC)
	Murray Bridge (RC)
	Southern Mallee (DC)
	The Coorong (DC)
Northern SA	Northern Areas (DC)
	Orroroo/Carrieton (DC)
	Peterborough (DC)
	Port Pirie C Dists (M) - City
	Port Pirie C Dists (M) Bal
	Unincorp. Pirie
	Flinders Ranges (DC)
	Mount Remarkable (DC)
	Port Augusta (C)
	Unincorp. Flinders Ranges
Kangaroo Island (SA)	Kangaroo Island

Functional Economic Zone	Statistical local area
Victor Harbour-Alexandrina (SA)	Alexandrina (DC) - Coastal
	Victor Harbor (C)
	Yankalilla (DC)
SA Riverlands	Berri & Barmera (DC) - Barmera
	Berri & Barmera - Berri
	Loxton Waikerie - East
	Renmark Paringa - Paringa
	Renmark Paringa - Renmark
	Unincorp. Riverland
Eyre (SA)	Cleve (DC)
	Elliston (DC)
	Franklin Harbour (DC)
	Kimba (DC)
	Le Hunte (DC)
	Unincorp. Lincoln
	Streaky Bay (DC)
	Whyalla (C)
	Unincorp. Whyalla
Naracoorte and Lucindale (SA)	Kingston (DC)
	Naracoorte and Lucindale (DC)
	Robe (DC)
Far North SA	Coober Pedy (DC)
	Roxby Downs (M)
	Unincorp. Far North

Functional Economic Zone	Statistical local area
Barossa (SA)	Gawler (T)
	Barossa (DC) – Angaston
	Barossa (DC) – Barossa
	Barossa (DC) – Tanunda
	Light (RegC)
	Mallala (DC)
	Clare and Gilbert Valleys (DC)
	Goyder (DC)
	Wakefield (DC)
Copper Coast (SA)	Barunga West (DC)
	Copper Coast (DC)
	Yorke Peninsula (DC) – North
	Yorke Peninsula (DC) – South
Ceduna (SA)	Ceduna (DC)
	Unincorp. West Coast
Lower Eyre Peninsula (SA)	Lower Eyre Peninsula (DC)
	Port Lincoln (C)
	Tumby Bay (DC)
South East SA	Tatiara (DC)
	Grant (DC)
	Mount Gambier (C)
	Wattle Range (DC) - East
	Wattle Range (DC) - West

Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area	Functional Economic Zone	Statistical local area
Pilbara (WA)	Port Hedland (T)	**Lower great southern (WA)**	Boddington (S)	**Midlands (WA)**	Victoria Plains (S)
	Ashburton (S)		Broomehill (S)		Cunderdin (S)
	Roebourne (S)		Gnowangerup (S)		Dowerin (S)
South East WA	Laverton (S)		Jerramungup (S)		Goomalling (S)
	Menzies (S)		Katanning (S)		Koorda (S)
Albany (WA)	Albany (C) - Central		Kent (S)		Northam (T)
	Albany (C) Bal		Kojonup (S)		Northam (S)
	Cranbrook (S)		Tambellup (S)		Tammin (S)
	Denmark (S)		Woodanilling (S)		Toodyay (S)
	Plantagenet (S)		Brookton (S)		Wongan-Ballidu (S)
GinGin (WA)	Chittering (S)		Cuballing (S)		Wyalkatchem (S)
	Dandaragan (S)		Dumbleyung (S)		York (S)
	Gingin (S)		Narrogin (T)		Bruce Rock (S)
	Moora (S)		Narrogin (S)		Kellerberrin (S)
	Dalwallinu (S)		Pingelly (S)		Merredin (S)
	Carnamah (S)		Wagin (S)		Mount Marshall (S)
	Coorow (S)		Wandering (S)		Mukinbudin (S)
	Irwin (S)		West Arthur (S)		Narembeen (S)
	Mingenew (S)		Wickepin (S)		Nungarin (S)
	Morawa (S)		Williams (S)		Trayning (S)
	Perenjori (S)		Corrigin (S)		Westonia (S)
	Three Springs (S)		Kondinin (S)		Yilgarn (S)
Central WA	Geraldton (C)		Kulin (S)	**South Eastern WA**	Dundas (S)
	Greenough (S) - Pt A		Lake Grace (S)		Esperance (S)
	Shark Bay (S)		Beverley (S)		Ravensthorpe (S)
	Cue (S)		Quairading (S)	**Kalgoorlie/Boulder**	Kalgoorlie/Boulder
	Mount Magnet (S)	**South West WA**	Bunbury (C)	**(WA)**	Coolgardie (S)
	Murchison (S)		Capel (S) - Pt A		
	Yalgoo (S)		Dardanup (S) - Pt A	**Carnarvon (WA)**	Carnarvon (S)
	Chapman Valley (S)		Harvey (S) - Pt A		Exmouth (S)
	Greenough (S) - Pt B		Capel (S) - Pt B		Upper Gascoyne (S)
	Mullewa (S)		Collie (S)		
	Northampton (S)		Dardanup (S) - Pt B		
Busselton-Margaret River (WA)	Augusta-Margaret River		Donnybrook-Balingup (S)		
	Busselton (S)		Harvey (S) - Pt B		
			Waroona (S)		
			Boyup Brook (S)		
			Bridgetown-Greenbushes (S)		
			Manjimup (S)		
			Nannup (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
	Kentish (M)	**Break O'Day (TAS)**	Glamorgan/Spring Bay		Northern Midlands - Pt A
	Latrobe (M) - Pt B		Break O'Day (M)		West Tamar (M) - Pt A
West coast (TAS)	West Coast (M)	**Meander Valley (TAS)**	Meander Valley - Pt B		George Town (M) - Pt B
Circular Head (TAS)	Circular Head	**Dorset (TAS)**	Dorset		Launceston (C) - Pt C
King Island (TAS)	King Island	**Flinders (TAS)**	Flinders		Northern Midlands (M) - Pt B
					West Tamar (M) - Pt B
Alice Springs (NT)	Alice Springs (T) - Charles	**Tanami (NT)**	Tanami	**Katherine (NT)**	Binjari (CGC)
	Alice Springs (T) - Heavitree		Yuendumu (CGC)		Elsey
	Alice Springs (T) - Larapinta	**Daly (NT)**	Cox-Finniss		Jilkminggan (CGC)
	Alice Springs (T) - Ross		Cox Peninsula (CGC)		Katherine (T)
	Alice Springs (T) - Stuart		Daly		Mataranka (CGC)
	Arltarlpilta (CGC)		Nauiyu Nambiyu (CGC)		Nyirranggulung Mardrulk Ngadberre
	Sandover		Pine Creek (CGC)		Yugul Mangi (CGC)
Tennant Creek(NT)	Elliott District (CGC)	**Borroloola (NT)**	Borroloola (CGC)	**Petermann-Simpson (NT)**	Petermann-Simpson
	Tableland		Gulf	**Groote Eylandt (NT)**	Angurugu (CGC)
	Tennant Creek (T)	**Daguragu (NT)**	Daguragu (CGC)		Groote Eylandt
	Tennant Creek - Bal		Lajamanu (CGC)	**East Arnhem (NT)**	East Arnhem - Bal
Ltyentye Purte (NT)	Ltyentye Purte	**Walangeri Ngumpinku (NT)**	Timber Creek (CGC)		Marngarr (CGC)
			Victoria Walangeri		Nhulunbuy
Anmatjere (NT)	Anmatjere (CGC)		Ngumpinku	**Tiwi Islands (NT)**	Tiwi Islands
	Hanson	**Thamarrurr (NT)**	Thamarrurr	**Kunbarllanjnja (NT)**	Kunbarllanjnja
Tapatjatjaka (NT)	Tapatjatjaka	**Jabiru (NT)**	Jabiru (T)	**West Arnhem (NT)**	West Arnhem
			South Alligator		