Final Report

Trends in Australian non-metropolitan housing markets, 1991-2001

authored by

Maryann Wulff, Margaret Reynolds, Ernest Healy, Stephen Legg and Scott Baum

for the

Australian Housing and Urban Research Institute

Swinburne-Monash Research Centre

October 2007

AHURi

Australian Housing
and Urban Research Institute

ACKNOWLEDGEMENTS

DISCLAIMER

AHURI FINAL REPORT SERIES

AHURI Final Reports is a refereed series presenting the results of original research to a diverse readership of policy makers, researchers and practitioners.

PEER REVIEW STATEMENT

An objective assessment of all reports published in the AHURI Final Report Series by carefully selected experts in the field ensures that material of the highest quality is published. The AHURI Final Report Series employs a double-blind peer review of the full Final Report – where anonymity is strictly observed between authors and referees.

CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

The study Trends in Australian non-metropolitan housing markets, 1991-2001 possessed two main goals:

1. to quantify the nature and extent of changes in the decade 1991-2001 within non-metropolitan housing markets in Australia and, integral to achieving this first goal,

2. to construct the first national non-metropolitan housing market database to hold empirical information on population, housing and labour markets for the census years 1991, 1996 and 2001.

The Final Report describes the data sources, process and procedures involved in developing the national database. The ABS defined 2001 Statistical Local Area (SLA) comprises the primary spatial unit for data collection. The SLA was chosen because

1. SLAs represent the smallest spatial unit for which the largest number of data items is available and

2. SLAs can be aggregated into higher level spatial areas that represent different housing markets.

The Final Report discusses the many complex, often tedious, steps involved in the data preparation stage of the research. 'Building' the data base involved defining and sourcing the relevant data items; ordering and acquiring the data; examining and assessing the data items for quality, consistency and coverage and, finally; formatting and integrating the data into the database. The main data issues and challenges related to

1. the temporal nature of the study, which incorporates three points in time and, for this reason, encountered changes in spatial boundaries, data item coverage and variable definitions,

2. the comprehensive range of variables derived from multiple sources that required integration with the data base and

3. the Australia-wide coverage of the database, which generated vast amounts of data that needed to be managed and analysed.

Close to 30 original data sources formed the foundation for the non-metropolitan database. These include several main Australian Bureau of Statistics (ABS) Census products (Time Series Profile; Expanded Community Profiles; Basic Community Profiles; ASGC Geographic boundaries; CD to 2001 SLA concordance files; ASGC Remoteness Classification/Structure 2001). Other ABS products encompassed the Integrated Regional Database; the ASGC National Localities Index and the 2001 Journey to Work Matrix. Moreover, the research team specified two migration matrices (based on moves between 1996 and 2001 in Victoria and New South Wales) from ABS and also requested the Accessibility/Remoteness Index of Australia from The National Centre for Social Applications of Geographical Information Systems (GISCA).

One of the most ambitious efforts at sourcing primary data for the non-metropolitan database involved pulling together individual property sale price records for the census years 1991, 1996 and 2001. The research team requested this information from all relevant state and territory government departments. In the end, this information was provided by Victoria, South Australia, Western Australia, and New South Wales, all in different file formats. The records for New South Wales, for example, arrived in over 1,200 separate files. The task of preparing these files was beyond the scope of this project, and thus, the New South Wales data are not available on the database.

Classifying settlements (SLAs) into housing markets

Even though all data items (with the exception of the internal migration matrices) are prepared and specified to the SLA level, the research team recognised that not each of the 743 SLAs across non-metropolitan Australia represented a discrete housing market. In other words, SLAs (and the data items associated with each SLA) needed to be aggregated to larger and more meaningful housing market areas. For example, the housing markets of regional cities such as Geelong, Wollongong and Newcastle consisted of more than one SLA, as did smaller regional centres and towns such as Ballarat or Bendigo in Victoria or Launceston in Tasmania, or Toowoomba in Queensland.

Accordingly the research team investigated the parameters of existing Australian settlement classification systems (see Positioning Paper for details) and discovered that while many classification systems existed, none specifically incorporated housing dimensions. The team, therefore, drew upon the main elements of existing classifications (population size; remoteness; coastal or inland location; or whether peri-urban or not) to develop a settlement classification for generating and presenting much of the data. This resulted in identifying nine broad types of settlements:

Regional cities: SLAs that are part of a Local Government Area defined as a 'City' (e.g. Greater Geelong City) and with combined 2001 populations greater than 100,000

Large regional centres: SLAs that are a part of a Local Government Area defined as a 'City' with combined 2001 populations between 50,000 and 100,000;

Regional towns: SLAs that are a part of a Local Government Area defined as a 'City with combined 2001 populations between 20,000 and 50,000

Other towns: SLAs that are a part of a Local Government Area defined as a 'City' with combined 2001 populations between 10,000 and 20,000

Large coastal: SLAs within 80km of the coast and 2001 populations between 30,000 and 50,000

Medium coastal: SLAs within 80km of the coast with 2001 populations between 20,000 and 30,000

Small coastal: SLAs within 80km of the coast (not elsewhere classified as remote) with 2001 populations less than 20,000

Small inland: inland SLAs (not elsewhere classified as remote with 2001 populations of less than 20,000

Remote: SLAs with a mean Accessibility/Remoteness Index of Australia (ARIA) score of greater than six

Some key trends

The Final Report presents an analysis of broad trends in population, dwelling stock, commencement activity, tenure, sales activity and prices (for Victoria, South Australia and Western Australia only). It also contains a discussion of the potential uses of internal migration and journey to work data for the understanding of housing markets. Moreover, the Final Report puts forward an alternative multivariate approach to classifying housing markets. Overall, the analysis revealed a striking degree of complexity in housing trends in non-metropolitan Australia in the period 1991-2001.

Between 1991 and 2001, Australia's non-metropolitan dwelling stock grew by 21.6 per cent, or over half a million dwellings, with the fastest growth (of approximately 25-36 per cent) being concentrated in the coastal areas and regional cities.

The total dwelling stock declined, however, in areas of extensive agriculture (such as western Victoria), extensive pastoralism (such as far west New South Wales), logging

(south west Western Australia) and mining (western Tasmania and parts of outback Western Australia).

The coastal fringe throughout almost all of Australia generally experienced high growth of more than twenty per cent (except for western Tasmania and King Island). Peri-urban areas and regional centres also had rapidly growing dwelling stocks.

The numbers of unoccupied dwellings rose in small and large coastal settlements (reaching 16-20 per cent compared to the 2001 non-metropolitan average of about 13 per cent). This relates to the growing presence of holiday homes in these housing markets. Remote settlements also experienced significant growth in unoccupied dwellings between 1991 and 2001 (from 13.8 to 16.8 per cent). In remote settlements, unoccupied dwellings are unlikely to represent holiday homes. Many remote communities experienced population decline during the decade.

Compared to 1991, in 2001 outright ownership had declined and both purchasers and private renters had increased respectively by about two percentage points. Private rental was proportionately strongest in remote regions and weakest in small inland settlements. Purchasers were disproportionately low as a category in 'large coastal' and 'remote' settlements.

The percentage change over the decade in private rental was particularly strong (24-49 per cent) in those areas already noted as experiencing strong population growth: 'regional cities', large regional centres and coastal areas (especially moderate and large coastal settlement types). The percentage growth in public rental was only strong in large coastal settlements, while large declines (approximately 15-26 per cent) were experienced in 'regional' and 'other' towns and small inland and remote settlements.

Annual growth in the number of new house commencements varied considerably over the years 1996-2000 (the only years for which data were available). Commencement activity was generally the most stable in the 'regional cities' over the period, growing at 7-10 per cent annually (except for 1998/99). Commencement activity for large regional centres peaked in 1998, declined, and then increased again in 2000. In small and medium coastal communities, activity expanded in 2000, with growth on the previous year advancing by 16-20 per cent. In settlements classified as 'other towns' and 'small inland', commencements also expanded notably in 2000. In 1997, remote settlements recorded a 42 per cent increase in commencement activity on the previous year and thereafter slowed considerably. The level of commencements tended to be strongly associated with population and labour market growth.

Separate houses dominated the dwelling stock of non-metropolitan Australia during the study period. In the small inland settlements, for example, around 90 per cent of the dwelling stock on average consisted of detached houses in 2001 (compared to the non-metropolitan average of 80.7 per cent).

The distribution of 'other dwellings' (comprising caravans, cabins, house boats, tents etc) was remarkably uniform across settlement type in 2001, with a narrow range of 3-6 per cent of dwelling stock, except for the remote areas where the figure is approximately 16 per cent.

Examination of trends in flats, units and apartments reveals a remarkably consistent picture of rapid growth. Throughout all settlement types, growth in this category averaged 39 per cent, but was greatest in medium and large coastal settlements and regional cities (approximately 46-58 per cent over the decade). Higher density dwellings (flats/units/apartments) grew at a greater rate than separate houses in all settlement types.

Due to the availability of data, the analysis of property price trends focused on Victoria, South Australia and Western Australia. The results showed strong house price growth in the large regional centres and regional towns during the period.

House price growth in Western Australia's small coastal and remote communities far outstripped the increases experienced in other settlement types. The housing prices in remote communities in Western Australia grew more rapidly than did house prices in established regional towns or large regional centres.

Markets where prices declined over the decade contrasted sharply with those where prices increased substantially. Intriguingly, in 1991, median house prices in declining markets were relatively stronger than in rising markets. By 2001, however, the median house price in declining and rising markets respectively was $64,000 and $107,500.

The relative level of sales activity (as indicated by the measure showing 'dwelling sales per 100 households') suggests that while rising house price markets may have recorded lower median sale prices in 1991, they were already experiencing considerably more activity than in declining markets and other settlements. Rising markets registered 3.8 sales per 100 households in 1991 compared with only 2.5 in declining markets (and 3.1 on average for all settlements). In 2001, the level of sales activity across all settlements was more similar, approximately 4.6 sales per 100 households across all settlements.

Sales of flats and units rose over the decade. In 1991, close to half the non-metropolitan settlements in the three states did not record a single sale in this segment of the market. By 2001, the number of settlements with no flat or unit sales decreased. The relative scarcity of flats and units in non-metropolitan housing markets is reflected in the premium median prices. Flat and unit sales, on average, commanded higher prices than did house sales.

Declining markets experienced negative population and household growth during the decade, while rising markets had above average rates of population and household growth. Population turn-over in the five years (1996-2001) was higher in the rising markets than other settlements. Rising markets were also typified by younger populations with greater ageing occurring in the declining markets.

Socio-economically, declining markets experienced a disproportionate growth in low income households (bottom 30 per cent of household incomes) and decline in high income households (top 40 per cent of household incomes) compared with all other settlements. The opposite occurred in rising markets in which low income households grew significantly slower than expected, while higher income households grew faster.

Two indicators related to rent assistance and public housing demonstrate the differential experience of declining and rising markets over the period. The annual average growth in rent assistance recipients over the years 1998-2003 was higher in both declining and rising markets than in all other settlements. Rising markets, in fact, had the highest increase of all. Moreover, the ratio of rent assistance recipients to public dwellings was higher for rising markets than declining markets, suggesting either public housing was more available in declining market areas or that rent assistance filled the need faced by low income households living in rising house price markets.

Internal Migration and Journey to Work Matrices

With the internal migration and journey to work matrices, the Final Report focuses on demonstrating how this information can be used to examine housing markets. These matrices are distinct from the major non-metropolitan database due to differences in spatial unit and format. Importantly, the information on internal migration and journey to work is available only for 2001 and therefore not capable of revealing trends over

time. The New South Wales Internal Migration Matrix, for example, can be used to show which areas and settlement types are subject to population gain or loss, the direction of net population movements, the volume of population movements, as well as to whether population gain or loss is differentiated by age or some other relevant social or demographic variable.

The analysis of journey-to-work data indicates respondents' movement from one place to another – from home to work. Two important 'self-containment' measures were derived from journey-to-work data. One calculated the proportion of an area's residential population which also worked in that same area; the other measured the proportion of jobs in an area filled by local residents. Both files were used to demonstrate their application to housing market analysis by presenting data related to the NSW southern Coastal region (which includes Shoalhaven). Shoalhaven's population grew by 22 per cent between 1991 and 2001. The analysis of internal migration data revealed net gains of family households, including couples with children and lone parents. Among households headed by persons aged 30 to 64 years, there was a disproportionately high gain in low income households. This information, coupled with data on tenure trends, helps to explain the increasing demands placed on Shoalhaven's private rental market. Analogously, the Journey to Work data showed that 90 per cent of employed residents worked in Shoalhaven. The others worked in destinations such as Wollongong, other large coastal areas, Sydney or small towns. This example demonstrated the use of journey to work data as well as the way in which local housing markets are supported to some degree by spatially distant labour markets.

An alternative multivariate clustering of settlements

The Final Report presents the results of a multivariate clustering of twenty individual variables (not including any house price records) into five 'housing market' clusters. (The basic spatial unit is the SLA, although some aggregations differ from those used in the non-metropolitan data base). M-clust, the clustering procedure, takes observations (in this case 518 spatial units) with various characteristics and then groups like observations based on the degree of similarity across given variables. Once the clusters are identified, the degree of difference or similarity between and among the groups is considered. This is done by examining 95 per cent confidence intervals for the mean of each variable across each cluster. This analysis identified the following five 'housing market' clusters:

1. Non-metropolitan population centres with expanding housing markets: (20 per cent of spatial units); above average population growth; above average level of rental financial stress; above average purchasers and above average new home completions relative to population.

2. Non-metropolitan population centres with low growth housing markets: (26 per cent of spatial units); above average rental financial stress; above average purchasers; below average ARIA index.

3. Rural-remote regions with expanding housing markets: (seven per cent of spatial units); below average percentage of purchasers; above average percentage of 'other' dwellings

4. Small non-metropolitan settlements with low growth housing markets (36 per cent of spatial units); above average in outright owners; below average in purchasers and private renters; below average ARIA; below average 'other' dwellings

5. Remote regions with low growth housing markets: (nine per cent of spatial units); below average level of purchasers; above average share of 'other' dwellings.

The M-clust analysis provides different outcomes and different perspectives from that offered by the settlement classification defined in the database. Its strength lies in its

ability to differentiate some of the possible drivers of housing markets, such as rate of growth, composition of the dwelling stock and the broad nature of tenure differences. On the other hand, the resulting clusters can include settlements of different population sizes and locations (mixing coastal, inland and peri-urban within the same cluster).

In closing, the Final Report commends the usefulness of the non-metropolitan database for bringing together essential population, housing and labour market information into one format for use in a variety of housing analyses. It is important that the information be continually updated - and the research team recommends the SLA as the appropriate spatial unit and the settlement classification as a meaningful analytical tool. The property record information provides an extremely valuable addition to the non-metropolitan database and it is vitally important that on-going development of the database encompass records for all states and territories. Several of the measures and rates presented in this study provide useful monitoring tools for the on-going assessment of non-metropolitan housing markets. A broad range of analyses can be conducted, once the relevant data are consolidated into a database as in this study. Trend analysis, projections, national and local housing market studies can be undertaken with the view to advising regional housing policy. Given the data-intensive nature of compiling and up-dating the data base, it is recommended that the Australian Bureau of Statistics participate in its future development and maintenance.

1   INTRODUCTION

1.1   Broad trends in non-metropolitan settlement in Australia.

In 2001, about one third of Australians lived beyond the eight state or territory capital cities. Non-metropolitan Australia comprised a population of 6.9 million people living in a vast area of almost 7.7 million kilometres.   By international standards, this represents a small population and an extremely low population density. Approximately 84 per cent of the area of non-metropolitan Australia is classified in this report as 'remote regions', and with less than half a million inhabitants, the population density averaged only 0.1 persons per square kilometre. In the more-densely settled accessible non-metropolitan regions, there were 62 urban settlements of more than 10,000 inhabitants that collectively housed 53 per cent of the non-metropolitan population.   The derivation of these settlement types is explained in chapter two. Between the 'remote regions' and the relatively large 'cities, centres and towns' lies an area of almost 1.1 million square kilometres inhabited by 2.7 million people, predominantly in hundreds of small townships along with a very small population dispersed on thousands of farms and outback 'stations'.

Even more striking on a continental scale is the coastal concentration of the non-metropolitan population resulting from a combination of broadly historical and environmental factors summarised in our Positioning Paper (Wulff et al. 2005). Figure 1.1 shows that most of the continental mainland and Tasmania had less than one person per square kilometre. These are landscapes dominated by broad-acre cereal cropping, mainly wheat, and further inland by extensive pastoralism, chiefly wool and beef, with scattered mining centres. Sizeable populations are only found in the comparatively well-watered southwest corner of Western Australia, and in a coastal arc stretching from South Australia's Yorke Peninsula, through Victoria and Tasmania, New South Wales and Queensland. A few tiny outliers are scattered along the Stuart Highway linking Darwin and Adelaide, as well as outback mining towns such as Kalgoorlie, Broken Hill and Mt Isa, and grazing centres like Roma. The arc is generally much less than 500 kilometres deep, with the greatest population concentration only 50 kilometres from the coast. This situation is associated with the remarkably high degree of urban primacy in the Australian settlement system, especially at the state level. Canberra, Adelaide, Perth, Melbourne and Sydney each dominated their respective hinterlands, so that the next largest cities in their states were all less than one-eighth the size of the metropolis. Hobart, Darwin and Brisbane each have larger rivals, but none are larger than a third. This high degree of primacy has been historically persistent because of various economic, political and cultural forces, and has presented serious challenges for the growth and role of settlements in non-metropolitan Australia.   This has been exacerbated over the past century by declining fertility, and especially since World War Two with significant structural and ownership changes in once relatively labour-intensive, family-farm dominated agriculture (Wulff et al. 2005). Despite these and other factors contributing to 'rural decline', Hugo (2003) has noted that in the thirty years after 1966, Australian country towns generally became more numerous, increased their proportion of the national population, and grew more rapidly than either their metropolitan or dispersed rural counterparts, although the growth cooled considerably in the 1990s. The result of these diverse trends was an apparent polarisation between the larger provincial centres and the declining country towns, but the reality is far more complex and dynamic (Wulff et al. 2005).

Figure 1.1: Non-metropolitan population density, 2001
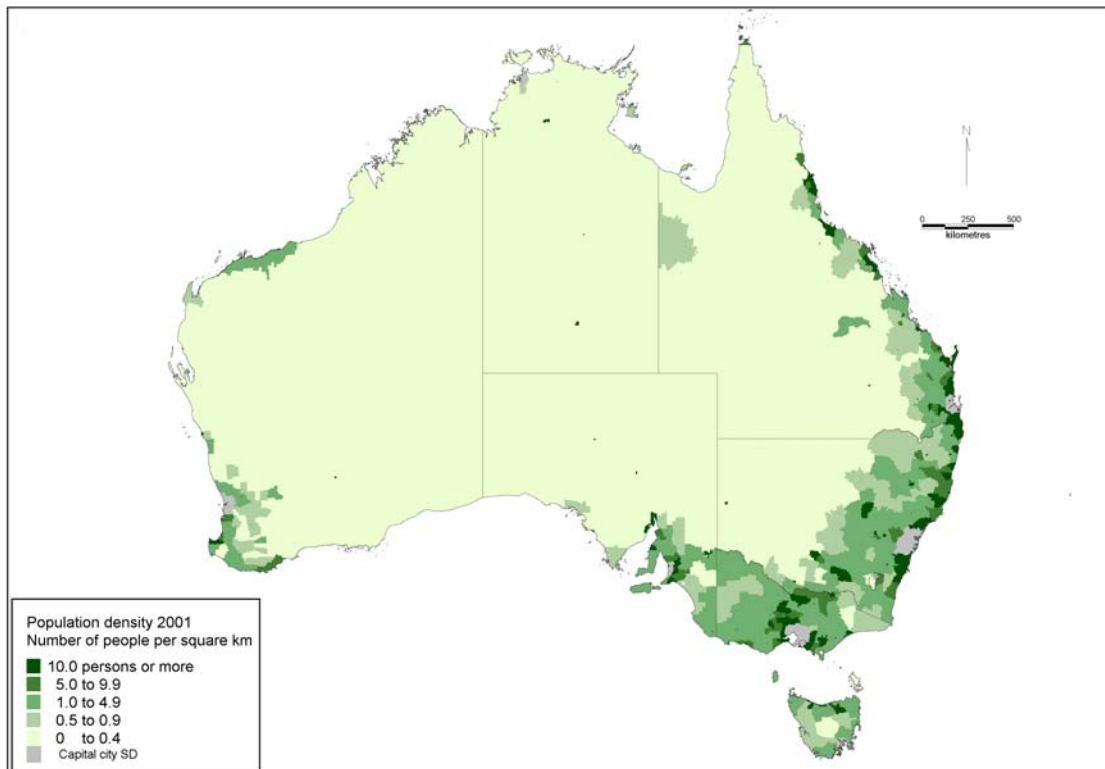
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 2001 (digital boundaries from ABS Census Basics (cat. no. 2045.0)

Figure 1.2 reveals considerable demographic change within the study period, 1991 to 2001. Relatively large gains in annual average population change were experienced in four notable areas. First, coastal regions especially in Western Australia, New South Wales and Queensland experienced substantial growth as part of the continued 'big shift' of retirees, young families and sea-changers (Salt 2001). Second, peri-urban areas around the capital cities in all states and territories, captured both migration from the bush to settlements closer to the metropolis and 'tree changers' moving from the city to nearby rural landscapes (McKenzie 1996). Third, outback population growth resulted from a combination of mining booms and high rates of natural increase in indigenous populations. Fourth, some larger provincial centres experienced growth, in part because of migration from surrounding smaller, and often 'declining', country towns (including retirees) as well as movement from the metropoli. The losses were generally more moderate, and involved substantial areas of Victoria, New South Wales, Queensland and Tasmania subject to 'rural decline', where small country towns experienced population loss due to a combination of structural change in agriculture, drought, the continued marginalisation of farming, and centralisation of services. In a few cases, local and regional decline in other primary industries such as logging and mining were implicated, for example in Tasmania and Western Australia. Nevertheless, the situation is remarkably dynamic: analyses of population change in the first half of the decade (1991-1996) contrasting strongly with that in the second half (1996-2001), and with the net inter-censal changes revealed in Figure 1.2 masking many of the shorter duration trends. In general, there was a much greater area and degree of population decline in the early 1990s, with far more extensive regions of inland South Australia, Western Australia, and Queensland along with western Tasmania experiencing more than two per cent average annual population loss. As in the overall inter-censal period 1991-2001, the coastal, peri-urban and provincial centre growth was strongly evident – although the widespread coastal growth was not quite as intensive between 1996 and 2001 as it had been earlier.

Figure 1.2: Non-metropolitan average annual population change, 1991- 2001

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 1991 & 2001 (digital boundaries from ABS Census Basics (cat. no. 2045.0)

Table 1.1 presents these demographic changes by settlement type. Population growth of the greatest magnitude (approximately 21-26 per cent) was experienced in large coastal regions, medium coastal regions, and regional cities. Moderate growth (approximately 7-13 per cent) occurred in small coastal regions, regional towns, and large regional centres, with growth of less than 3 per cent in remote regions and small inland regions, and with 'other towns' experiencing -2.6 per cent growth. In the first half of the decade, growth was generally higher than in 1996-2001 in most settlement types, although by contrast, remote regions and other towns grew more, or declined less, respectively. Small, medium and large coastal regions, along with regional cities experienced the largest average annual population growth rates, with the lowest rates in small inland, remote regions, and 'other towns' – the latter experiencing negative growth. Thus, apart from the 'other towns', with populations of between 10,000 and 20,000, population growth tended to increase with population size (and to some extent accessibility). Perhaps the 'other towns' benefited little from either the movement to larger centres from the declining smaller surrounding townships or the tree changers leaving the metropolis in search of a rural lifestyle. More specifically, the 'other towns' may have experienced considerable unemployment in agriculture as well as key extractive and ancillary industries such as mining, fishing and forestry, particularly in the early 1990s.

9

Table 1.1: Selected population indicators by settlement type, 1991, 1996 and 2001

	Population		% of non-metro population	Average annual population change			Population change (%)		
	1991	2001		91-96	96-01	91-01	91-96	96-01	91-01
Regional cities	1,442,063	1,743,400	25.4	2.1	1.7	1.9	11.3	8.6	20.9
Large regional centres	717,145	765,836	11.2	0.7	0.6	0.7	3.6	3.1	6.8
Regional towns	886,224	969,893	14.1	1.2	0.6	0.9	6.0	3.3	9.4
Other towns	187,008	182,225	2.7	-0.4	-0.1	-0.3	-2.0	-0.6	-2.6
Small coastal	732,872	830,368	12.1	1.6	0.9	1.2	8.6	4.4	13.3
Medium coastal	147,272	183,267	2.7	3.0	1.4	2.2	15.9	7.4	24.4
Large coastal	204,241	257,476	3.8	2.7	2.0	2.3	14.3	10.3	26.1
Small inland	1,432,558	1,472,015	21.4	0.3	0.3	0.3	1.5	1.3	2.8
Remote	446,648	460,258	6.7	0.2	0.4	0.3	1.1	1.9	3.0
Non-metro Aust	6,196,031	6,864,738	100.0	1.2	0.9	1.0	6.1	4.4	10.8
Metro Australia	10,566,000	11,892,435	na	1.1	1.3	1.2	5.7	6.5	12.6

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 1991, 1996 & 2001.

In terms of age structure, Figure 1.3 reveals the widespread ageing of the population profile throughout the nation. Ironically, the map underestimates this ageing because large areas of non-metropolitan Australia had only 'moderate' gains of 10–60 per cent because of their relatively small, stable populations already experiencing high aged dependency ratios, i.e. disproportionately aged populations (Figure 1.4). Apart from those areas experiencing rural decline, such as in the wheat-sheep belt of inland Australia in general, and specifically regions like the Wimmera and Mallee in western Victoria and the drought-stricken wool country of far western New South Wales, other aged-dependent regions included the New South Wales and Queensland coastline and the central coast of Western Australia from Shark Bay to Esperance. The two latter regions experienced massive growth from an influx of retirees as both permanent-residents and tourists. Nevertheless, Figure 1.5 indicates that considerable numbers of Statistical Local Areas (SLAs) in 2001 had relatively youthful populations, especially in peri-urban areas in Victoria, in the youthful mining communities of Western Australia and Northern Territory and in indigenous communities especially in the Northern Territory. Other relatively 'youthful' agricultural areas in north-central New South Wales, south central Queensland, and south west Western Australia can be discerned.

Figure 1.3: Non-metropolitan percentage change in persons aged 65 and over, 1991-2001
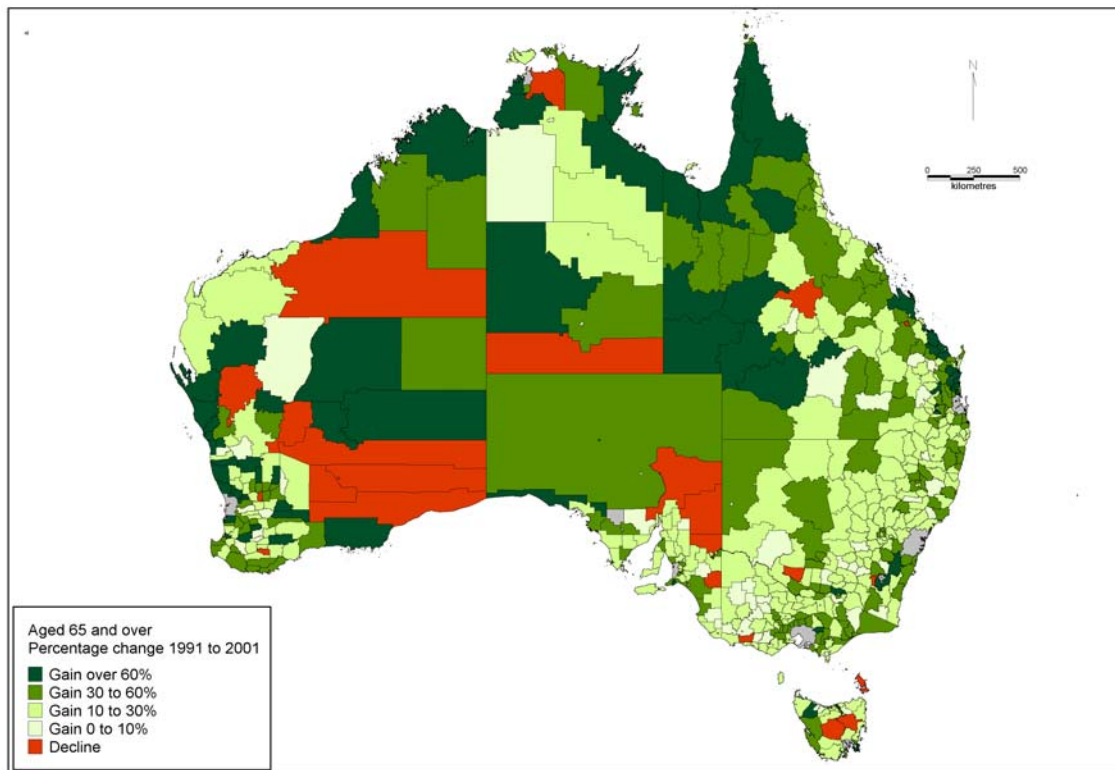
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 1991 & 2001 (digital boundaries from ABS Census Basics (cat. no. 2045.0)
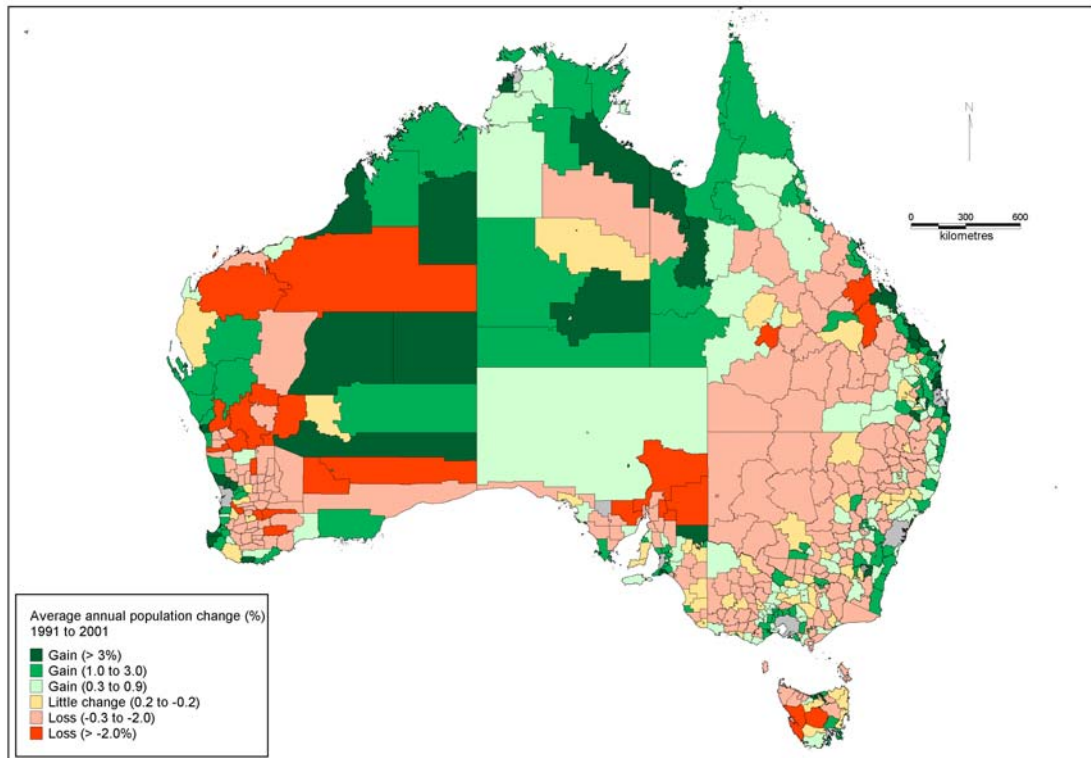
Figure 1.4: Non-metropolitan aged dependency ratio 2001
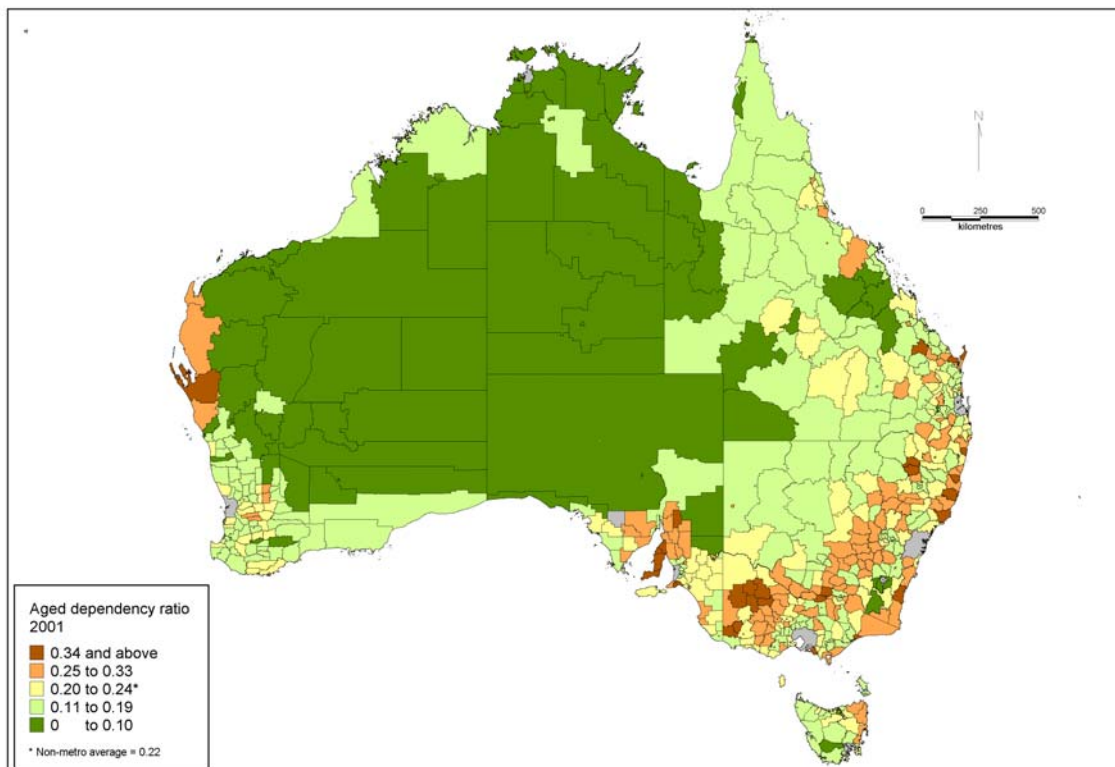
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 2001 (dig. bounds ABS Census Basics (cat. no. 2045.0)

Figure 1.5: Non-metropolitan percentage aged under 15 years in 2001
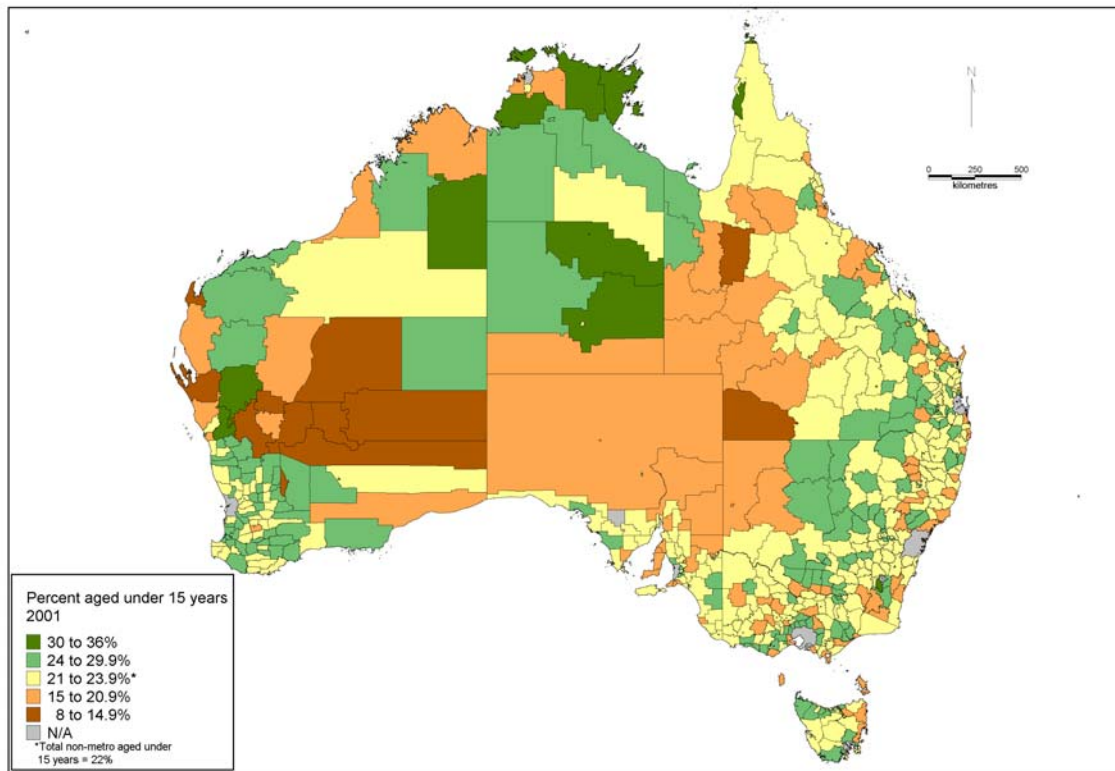
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 2001 (digital bounds. ABS Census Basics (cat. no. 2045.0)

Table 1.2 indicates relative uniformity in the age structure of most settlement types in regard to the over-65 year age cohort (with typically about 14 per cent being in this 'aged' category); although coastal regions of all types, especially the largest ones, were disproportionately aged, due to immigration of retirees, while remote regions were relatively youthful, especially given the preponderance of young adult workers attracted to employment in the mining and pastoral industries. The rate of ageing over the decade was consistently high, even in relatively youthful remote regions, although it was considerably lower in the 'other towns' settlement type (17.6 per cent compared to the 28.9 per cent non-metropolitan average). The dependency ratios, showing the under 15 year and over 65 year cohorts relative to the working age 15-64 year olds, are remarkably consistent across the settlement types as well as over time (between 1991 and 2001), with the relatively aged-dependent coastal settlements contrasting slightly with the lowest dependency in remote regions (despite the high rates of natural increase in indigenous populations in some remote regions and some small inland regions). Not surprisingly, given the ageing of the Australian population, child dependency decreased and aged dependency increased in all settlement types. The magnitude of these changes needs to be remembered, with most of the actual gains in both the young (under 15 years) and old (over 65 years) cohorts occurring in just two settlement types: the seven 'regional cities' (each with populations larger than 100,000) and the approximately 270 'small inland regions'.

Table 1.2: Selected age and dependency indicators by settlement type, 1991 and 2001

	Aged 65 and over					Dependency ratio		Child dependency ratio		Aged dependency ratio	
	1991	2001	1991 %	2001 %	% change 91-01	1991	2001	1991	2001	1991	2001
Regional cities	192,500	253,719	13.3	14.6	31.8	0.53	0.54	0.33	0.31	0.20	0.22
Large regional centres	86,625	106,237	12.1	13.9	22.6	0.56	0.56	0.37	0.34	0.19	0.22
Regional towns	102,304	130,366	11.5	13.4	27.4	0.56	0.56	0.38	0.35	0.18	0.21
Other towns	21,533	25,330	11.5	13.9	17.6	0.56	0.57	0.38	0.36	0.18	0.22
Small coastal	87,064	117,824	11.9	14.2	35.3	0.58	0.58	0.40	0.35	0.19	0.22
Medium coastal	19,249	26,653	13.1	14.5	38.5	0.61	0.58	0.40	0.35	0.21	0.23
Large coastal	39,439	56,197	19.3	21.8	42.5	0.68	0.71	0.36	0.34	0.32	0.37
Small inland	161,723	198,125	11.3	13.5	22.5	0.58	0.58	0.40	0.37	0.18	0.21
Remote	31,509	42,241	7.1	9.2	34.1	0.50	0.49	0.40	0.35	0.11	0.14
Non-metro Aust	**741,946**	**956,692**	**12.0**	**13.9**	**28.9**	**0.56**	**0.56**	**0.37**	**0.34**	**0.19**	**0.22**
Metro Aust	**1,155,052**	**1,412,754**	**10.9**	**11.9**	**22.3**	**0.48**	**0.47**	**0.32**	**0.30**	**0.16**	**0.17**

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 1991 and 2001

Given the enormous differentiation of housing markets responding to various demographic and social changes, a more detailed analysis of dwelling stock, dwelling types and tenure is required, and this is discussed in chapter three. But first, the development of the data base and the classification system used in this project is examined in chapter two.

2 CLASSIFYING NON-METROPOLITAN AUSTRALIA: CONSTRUCTING A NATIONAL NON-METROPOLITAN HOUSING MARKET DATABASE

This broad goal of this project was two-fold: i.) to quantify the nature and extent of changes in the decade 1991-2001 within non-metropolitan housing markets in Australia and ii.) to construct the first national non-metropolitan housing market database, drawing upon a range of ABS census data and other ABS products (for the census years 1991, 1996 and 2001) and other relevant information such as state government property record sales. In order to achieve the first goal (analysis of trends), the second goal (constructing the database) needed to be accomplished. Information in the database underpins all analyses of broad trends.

The Positioning Paper provides an in-depth background to, and rationale for, the construction of this database (Wulff et al 2005). The Positioning Paper points out that, while the complex nature of regional Australia has resulted in a large number of case studies, a broad overview of trends has been lacking. The approach adopted in this research aimed to provide a systematic understanding of nation-wide regional housing market trends through the creation of a comprehensive information base. From this database, a typology or classification of non-metropolitan settlements was developed – an approach necessitated primarily by the diversity of regional Australia, but also for conceptual clarity and smooth communication of results. This chapter describes our typology of Australian non-metropolitan regions and also summarises the process of building the non-metropolitan housing market database.

2.1 Classifying non-metropolitan Australia

Non-metropolitan Australia is vast in geographic size and diverse in settlement characteristics. For this reason, it was necessary to classify non-metropolitan Australia into various settlement types to enable the identification and the analysis of housing market trends throughout this enormous area. In this study, non-metropolitan Australia is defined as all areas outside the state capital city Statistical Divisions. By defining different settlement types, such as regional cities and centres, areas not usually thought of as 'non-metropolitan' or 'regional' Australia, for example the Queensland Gold Coast, can be examined separately. The combination of factors that defines each settlement type is described below. A map showing the distribution of these settlements is presented in Figure 2.1 and a list of the regional cities, centres and towns in each state is included in Table 2.1. In Appendix 1, the 743 SLAs along with their settlement type are listed.

The 743 non-metropolitan SLAs were grouped into nine settlement types according to the following criteria:

Regional cities: Defined by SLAs that are a part of a Local Government Area (LGA) that is defined as a 'City' (e.g. Greater Geelong City); the combined 2001 populations of these SLAs to the LGA is greater than 100,000; seven regional cities have been identified in this study (see Table 2.1); these regional cities were also defined in the Bureau of Rural Sciences social atlas, 'Country Matters' (Haberkorn et al 2004).

Large regional centres: SLAs that are a part of a Local Government Area (LGA) that is defined as a 'City'; the combined 2001 populations of these SLAs to the LGA is between 50,000 and 100,000; eleven large regional centres have been identified in this study.

Regional towns: SLAs that are a part of a Local Government Area (LGA) that is defined as a 'City'[1]; the combined 2001 populations of these SLAs to the LGA is between 20,000 and 50,000; 32 regional towns have been identified in this study.

Other towns: SLAs that are a part of a Local Government Area (LGA) that is defined as a 'City'; the combined 2001 populations of these SLAs to the LGA is between 10,000 and 20,000; twelve 'other towns' have been identified in this study.

Table 2.1: Australian non-metropolitan cities, centres and towns (2001 population)

State	Regional cities (pop. 100k +)	Large regional centres (pop. 50-100k)	Regional towns (pop. 20-50k)		Other towns (pop. 10-20k)
NSW	Wollongong	Shoalhaven	Greater Taree	Queanbeyan	Greater Lithgow
	Newcastle	Coffs Harbour	Albury	Bathurst	Grafton
		Wagga Wagga	Lismore	Armidale	
			Tamworth	Griffith	
			Dubbo	Goulburn	
			Orange	Broken Hill	
VIC	Greater Geelong	Greater Bendigo	Mildura	Wangaratta	Horsham
		Ballarat	Wodonga	Swan Hill	Ararat
		Latrobe (LGA)	Warrnambool		
		Greater Shepparton	Bairnsdale-Lakes Entrance		
QLD	Gold Coast	Toowoomba	Hervey Bay	Mount Isa	Ipswich
	Sunshine Coast	Mackay	Bundaberg		Charters Towers
	Townsville-Thuringowa	Rockhampton	Gladstone		
	Cairns		Maryborough		
SA			Mount Gambier		Port Pirie
			Whyalla		Murray Bridge
					Port Augusta
					Port Lincoln
WA			Mandurah	Bunbury	Geraldton
			Albany	Busselton	
			Kalgoorlie/Boulder		
TAS		Launceston	Devonport		Burnie
NT			Alice Springs		

Large coastal: SLAs that are within 80km of the coast; 2001 population between 30,000 and 50,000; only seven large coastal SLAs were identified and they are all located in New South Wales.

Medium coastal: SLAs that are within 80km of the coast; 2001 population between 20,000 and 30,000; seven medium coastal SLAs were identified and are located in New South Wales (x 4) and Queensland (x 3).

---

[1] Two exceptions to this guideline exist: Bairnsdale-Lakes Entrance in Victoria and Busselton in Western Australia. Both are coded as 'regional towns' even though they are contained within 'Shire' LGAs rather than 'City' LGAs because, otherwise, their populations would make them the only 'medium coastal' SLAs in their respective states.

Small coastal: SLAs that are within 80km of the coast (but not remote); 2001 population is less than 20,000; 112 such SLAs were identified and are located in all states except the Northern Territory (and the ACT).

Small inland: The remaining inland SLAs, not classed as remote, all have a 2001 population of less than 20,000[2]; 269 small inland SLAs were identified and are distributed across all states and territories.

Remote: SLAs have a mean Accessibility/Remoteness Index of Australia (ARIA) score of greater than 6; are located in coastal or inland regions; populations range from about 150 to nearly 18,000; 143 remote SLAs were identified and are found in all states except Victoria (and the ACT).

The above criteria shaped the general guidelines for the classification of each SLA into a settlement type. The process of classifying a number of SLAs, however, involved some divergence from these guidelines and consideration was also given to issues of contiguity (the coding of adjacent SLAs), the population of remote SLAs if the ARIA score was 'borderline', and reference was also made to the classification system developed in the Haberkorn et al (2004) Country Matters publication. Furthermore, although the typology defines regional 'cities', 'centres' and 'towns', the data for these settlement types refers to the SLA (or group of SLAs) that contains this centre and not the actual town boundary that is defined at the Urban Centre/Locality (UC/L) scale. The regional towns of Mt. Isa in far western Queensland, or Mildura in northwest Victoria, are examples of this that can be seen clearly in Figure 2.1.

2.2 Constructing the database

Broadly, the non-metropolitan housing market database holds an array of data items relating to: housing supply (dwelling stock, prices); housing demand (household characteristics, population mobility); external determinants such as housing assistance and; local labour market characteristics such as industry and occupation structures. Table 2.2 lists the variables included in the database. As the vast majority of these data items are only available in a spatially aggregated form, choice of spatial unit was an important consideration in the project formulation stage. The geographic scale of the spatial unit could not be so broad as to conceal the dynamics of the smaller housing markets in regional Australia and, on the other hand, not so fine as to impede analysis, restrict data availability or excessively inflate costs. Consequently, the ABS defined 2001 Statistical Local Area (SLA) was chosen because it is the smallest spatial unit for which the broadest range of most consistently defined data items could be gathered, and for which the greatest degree of boundary concordance could be achieved, over time. Data for 743 SLAs located outside the state capital city Statistical Divisions (SDs) are held in the database.[3]

In a data-intensive project such as this, a large proportion of project time is absorbed by data preparation. Such preparation involves defining and sourcing the relevant data items; ordering and acquiring the data; examining and assessing the data items for quality, consistency and coverage and, finally; formatting and integrating the data into the database thereby making the range of variables available for analysis by the research team. A summary of data sources is provided in Appendix 2. In this project, data issues have arisen for a range of reasons, mostly relating to: the temporal nature of the study which incorporates three points in time (1991, 1996 and 2001); the desire to include a comprehensive range of variables; the Australia-wide coverage of the database and; the availability of the vast majority of data in a pre-determined, spatially

---

[2] One exception to this guideline exists: Baw Baw (S) – Pt B West. This SLA was coded to Victorian small inland even though its 2001 population was around 26,000 because, otherwise, it would have been the sole 'medium inland' SLA in the database.

[3] Appendix 1 lists the non-metropolitan SLAs that are excluded from analysis.

aggregated form. As a data source, the ABS Time Series Profile (TSP) addresses many of the above issues by providing consistently defined data items[4] at temporally consistent 2001 Australia-wide spatial units, for the latest three census years. It was not possible, however, to obtain all the required data items from the TSP.

Subsequently, variable definition and spatial unit changes that occurred in the data for the 1991, 1996 and 2001 censuses had to be addressed independently by the research team. Household income and weekly rent ranges, for example, are either not adjusted for inflation in different years or defined differently between census years thereby making census to census comparisons problematic. Due to such problems, and in the absence of requesting costly special matrices from the ABS, 1996 weekly rent and household income data were excluded from the database. Further, as it is impossible to compare directly the dollar ranges in these variables, analysis was restricted to a broad comparison of similar percentage distributions over time. To accommodate spatial unit boundary changes over the decade, 1991 and 1996 CD to 2001 SLA concordance files were used to allocate the data from the earlier census years to the 2001 SLA boundaries. Unit record scale property sales data were allocated to an SLA boundary using their locality/suburb identifier and the ABS National Localities Index.

Both spatial and temporal coverage of different data items were further issues to contend with in the database building stage. That is, not all proposed data items were accessible for all Australian states or available for each of the three census years. For instance, although a request was made to each appropriate state government department for property sales information, data were obtained only for Victoria, South Australia, Western Australia and New South Wales. Formatting and non-response issues prevented the acquisition or integration of data from the remaining states.[5] Further, price shaped the structure of the Victorian and New South Wales ABS special request migration matrices (1996 to 2001) and also prohibited obtaining the same information for the remaining Australian states. On the other hand, basic journey to work data were obtained Australia-wide, but only for the year 2001. Temporal coverage of Commonwealth Rent Assistance figures was also restricted to the years 1998 to 2001 by its availability in the Integrated Regional Database (IRDB). In summary, it was found that total, comparable coverage for a minority of proposed data items for each of the census years was not possible due to matters relating to: availability; accessibility; cost; spatial concordance and; definitional comparability. The key variables, data sources and variable details of the non-metropolitan housing market database are summarised in Table 2.2 below.

---

[4] With some exceptions, for example, occupation structure, family type, weekly rent, household income.

[5] Property sales data for 1991, 1996 and 2001 were obtained from the NSW Department of Lands. The structure of the 1,200 files received was such that the data could not be formatted in time for submission of this report.

Table 2.2: Australian non-metropolitan housing market database variables*

Theme & key variables	Source	Unit, spatial scale & year/s	Variable details
HOUSING STOCK			
Tenure and landlord type	ABS Census TSP table T19	→ OPD → SLA → 1991, 1996, 2001	Fully owned; being purchased; rented from state/territory housing authority; rented other; rented landlord not stated; other tenure type.
Dwelling type	ABS Census TSP table T18	→ OPD & UPD → SLA → 1991, 1996, 2001	Separate house; semi-detached, row or terrace house, townhouse; flat, unit, apartment in a one or two storey block; flat, unit or apartment in a three or more storey block; other dwelling type.
Number of bedrooms	ABS Census BCP table B51 1991 ECP table X49 2001	→ OPD → SLA → 1991 & 2001	→ Concordance of 1991 CDs to 2001 SLA boundaries used → Number of bedrooms: zero or one; two; three; four or more
Dwelling commencements	ABS IRDB	→ Dwellings → SLA → 1996 to 2001	Total number of new houses commenced (as notified by local and other government authorities)
HOUSING ASSISTANCE CHARACTERISTICS			
Public housing dwellings	ABS Census TSP table T19	→ OPD → SLA → 1991, 1996 & 2001	Households where tenure was recorded as 'rented from state/territory housing authority'
CRA recipients	ABS IRDB	→ Persons → SLA → 1998 to 2003	Number of CRA recipients
OTHER HOUSING MARKET CONDITIONS			
Unoccupied private dwellings	ABS Census TSP table T18	→ Dwellings → SLA → 1991, 1996 & 2001	Dwellings unoccupied on Census night by type (see types listed in 'Dwelling type' above)
Non-private dwellings	ABS Census ECP table X45	→ Dwellings → SLA → 2001	Hotel, motel; nurses quarters; staff quarters; boarding house, private hotel; boarding school; residential college, hall of residence; public hosp; private hosp; psychiatric hosp or inst'n., hostel for the disabled; nursing home; accomm. for the retired or aged; hostel for homeless, night shelter, refuge; childcare inst'n.; corrective inst'n. for children; other welfare inst'n.; prison, corrective and detention inst'n. for adults; convent, monastery, etc

Theme & key variables	Source	Unit, spatial scale & year/s	Variable details
POPULATION CHARACTERISTICS			
Age	ABS Census TSP table T02	→ Persons → SLA → 1991, 1996 & 2001	Age groups: 0-14; 15-24; 25-34; 35-44; 45-54; 55-64; 65-74 and; 75 & over
Country of birth	ABS Census TSP table T07	→ Persons → SLA → 1991, 1996 & 2001	Number of persons born in: Australia; an English-speaking country; a non-English speaking country.
Indigenous	ABS Census TSP table T01	→ Persons → SLA → 1991, 1996 & 2001	Number of indigenous persons
Education	ABS Census TSP table T11	→ Persons → SLA → 1991, 1996 & 2001	Number of persons with: a bachelor degree or higher; an advanced diploma, diploma or certificate.
Population growth	ABS Census TSP table T01	→ Persons → SLA → 1991, 1996 & 2001	Population growth rates from: 1991 to 1996; 1996 to 2001; 1991 to 2001
Urban/rural population	ABS IRDB	→ Persons → SLA → 2001 only	Percent of the SLA's population that is classed as 'urban' or 'rural'
Median age	ABS Census TSP table T22	→ Persons → SLA → 1991, 1996 & 2001	Median age (in years) of the SLA's population
HOUSEHOLD CHARACTERISTICS			
Household type	ABS Census BCP table B44 1991 BCP table B27 1996 ECP table X47 2001	→ Households → SLA → 1991, 1996 & 2001	→ Concordance of 1991 CDs to 2001 SLAs and 1996 CDs to 2001 SLAs used → Couple family with children; couple family without children; one parent families; other families (related individuals/multi-family); group households; lone person households
Household income	ABS Census BCP table B29 1991 BCP table B31 2001	→ Households → SLA → 1991 & 2001	→ Concordance of 1991 CDs to 2001 SLAs used → 1996 household income not included due to incompatible income ranges
Mean household size	ABS Census TSP table T22	→ Households → SLA → 1991, 1996 & 2001	Mean size of households in the SLA

Theme & key variables	Source	Unit, spatial scale & year/s	Variable details
PRICES, RENTS, AFFORDABILITY			
Weekly rent paid	ABS Census BCP table B55 1991 TSP table T20 2001	→ OPDs being rented → SLA → 1991 & 2001	→ Concordance of 1991 CDs to 2001 SLAs used → Includes those dwellings being rented from a State Housing Authority → 1996 not included due to incompatible rent ranges
Property price sales	Appropriate state government departments	→ Unit record → Point data → 1991, 1996 & 2001	Sale price and date by property/dwelling type and address Sales aggregated to SLA scale using ABS National Localities Index → VIC: aggregated to non-metropolitan SLAs → SA: aggregated to non-metropolitan SLAs → WA: aggregated to non-metropolitan SLAs → NSW: data obtained but file format inappropriate → NT: data was promised but not delivered → QLD: available data format inappropriate/ incompatible → TAS: no response to request
ECONOMIC AND LABOUR MARKET VARIABLES			
Journey to work	ABS Census Special request matrix	→ Employed persons → SLA → 2001 only	Employed persons: SLA of residence on Census night by SLA of work destination
Occupational structure	ABS Census TSP table T16	→ Employed persons → SLA → 1991, 1996 & 2001	Managers & administrators; professionals; associate professionals; tradespersons & related workers; advanced clerical & service workers; intermediate clerical, sales & service workers; intermediate production & transport workers; elementary clerical, sales & service workers; labourers & related workers; inadequately described.
Unemployment rate	ABS Census TSP table T01	→ Persons → SLA → 1991, 1996 & 2001	Unemployed persons as percentage of the labour force
Labour force participation	ABS Census TSP table T01	→ Employed persons → SLA → 1991, 1996 & 2001	Persons in the labour force as percentage of working age population

Theme & key variables	Source	Unit, spatial scale & year/s	Variable details
MIGRATION AND MOBILITY			
Residential turn-over (1 yr)	ABS Census BCP table B22	→ Persons (aged 1+) → SLA → 2001	Persons at the same address/a different address one year prior to the 2001 Census
Residential turn-over (5 yrs)	ABS Census BCP table B22	→ Persons (aged 5+) → SLA → 2001	Persons at the same address/a different address five years prior to the 2001 Census
Net migration	ABS IRDB	→ Persons → SLA → 1992 to 2001	Number of in-migrants minus the number of out-migrants
Usual residence five years ago	ABS Census Special request matrices	→ Persons & household reference person → Customised geography → 1996 to 2001	Persons/household reference person counted by: tenure; household type; age group; structure of dwelling; weekly household income group and; usual residence within customised geographic area at 1996 Census and 2001 Census. Victoria and New South Wales only.
GEOGRAPHIC INDICATORS			
Settlement type	Defined by research team	→ SLA	2001 SLAs classified into: regional city; large regional centre; regional town; other town; small coastal, medium coastal; large coastal; small inland; remote.
Coastal or non-coastal	Defined by research team	→ SLA	→ Calculated in MapInfo → Coastal SLAs are, broadly, those SLAs that form the coastline or where the centroid of the SLA falls within a 50-80km buffer of the coastline.
Peri-urban	Defined by research team	→ SLA	SLAs adjacent to capital city Statistical Divisions
Population density	ABS Census counts	→ Persons → SLA	Calculated in MapInfo using 2001 population counts and 2001 SLAs
ARIA++	GISCA	→ SLA → 2001	Continuous variable; values range from 0 (high accessibility) to 18 (high remoteness); based on road distance from more than 10,000 localities to nearest service centre (grouped by population size); interpolated to Australia-wide one kilometre grids; SLA index calculated using simple arithmetic mean of index values of all grid cells wholly/predominantly within the SLA boundary (GISCA 2004).
Area (km^2)	ABS Census geography	→ SLA	Calculated in MapInfo for 2001 SLA boundaries

* Abbreviations:
BCP: Basic Community Profile   CD: Census Collection District
ECP: Expanded Community Profile   SLA: Statistical Local Area
TSP: Time Series Profile   OPD: Occupied Private Dwelling
CRA: Commonwealth Rent Assistance   UPD: Unoccupied Private Dwelling
IRDB: Integrated Regional Database   BTRE: Bureau of Transport & Regional Economics
ARIA: Accessibility/Remoteness Index of Australia

2.3 An overview of the non-metropolitan housing market database

The AHURI non-metropolitan housing market database is comprised, in fact, of several discrete files due to the multi-sourced nature of the data collection; the different spatial units available, and the variable data coverage.

These databases are not available for public access because of the licensing restrictions that limit use to the principal research team and Monash University.

The eight databases developed and held by Monash University comprise[6]:

1. Master All State SLA:

   → Unit of analysis – 754 statistical local areas covering the non-metropolitan regions of each state and territory (although present in this database, 11 unincorporated SLAs are excluded from analysis due to lack of data on many variables)

   → No. of variables: 397 variables, in the form of raw census counts

   → Spatial variables computed: state, settlement type, country matters classification

   → Comment: This Master All State File is the initial point for calculating data for new settlement types. For example, 'Regional Cities' consist of more than one SLA. Data on each SLA must be aggregated and then incorporated into the settlement file.

2. All State Settlement

   → Unit of analysis – 611 centres and settlements (selected SLAs grouped into particular regional cities, large regional centres, or regional towns; plus other individual SLAs)

   → No. of variables: 390. Variables include the raw counts of all ABS data collected for the study, plus computation of new measures such as growth rates, percentages and so forth.

   → Comment: Because the spatial units in this file have been aggregated, or are capable of being aggregated, into the settlement classification developed for this study, this data file is used for the majority of the analyses in this report.

3. Vic, SA, WA non-metropolitan property sales, 1991, 1996, 2001

   → Unit of analysis: 140,385 individual sales records

   → No. of variables: 15 variables (five original items repeated for each census year). Items include sale price, dwelling type, date of sale, and address (including street address, postcode, and LGA).

   → Comment: this data file is extremely valuable and represents a massive data construction task. An enormous amount of data cleaning, formatting and merging was required. Victoria, South Australia and Western Australia were the only states that responded with information in a format that could be prepared within the time frame and budget of the study. Files were received for separate census years and different states used different formats. We were not able to include the New South Wales data, for example, because it came in over 1,500 separate files.

---

[6] Generally in both Excel and SPSS format and in MapInfo format for mapping

4. Master Three State Property SLA

   → Unit of analysis: 306 SLAs in non-metropolitan Victoria, South Australia and Western Australia

   → No. of variables: 389

   → Comment: Individual sales records from the 'Vic, SA, WA non-metropolitan property sales, 1991, 1996, 2001' file are collated into the 306 SLAs that make up non-metropolitan Victoria, South Australia, and Western Australia. This information has then been merged on an SLA by SLA basis with the original ABS information available on 'Master All State SLA'.

5. Three State Property Settlement

   → Unit of analysis: 277 centres and settlements in non-metropolitan Victoria, South Australia and Western Australia

   → No. of variables: 493 variables. These variables include the property sales data items and the full set of ABS information from the 'Master Three State Property SLA File' plus a large range of computed variables to include in the analysis of property prices.

   → Comment: this file most closely represents the desired shape of a national non-metropolitan housing database, as it includes the valuable property sales information.

6. New South Wales Special Request Internal Migration Matrix

   → 18,769,017 individual records for all persons on their geographic changes in residence between 1996 and 2001.

   → No. of variables: 7 variables (tenure, household type, age, dwelling structure, household income, reference person indicator)

   → Spatial geography: New South Wales has been divided into 14 broad migration/housing market regions that approximate the settlements types used in this study: Regional cites, Wollongong and Newcastle are identified; coastal centres and towns (north and south of Sydney identified); other coastal far north, mid-north, and south); inland centres and towns, other small inland settlements; remote settlements; Sydney peri-urban; Sydney (inner, middle and outer) plus the rest of non-metropolitan Australia and the rest of metropolitan Australia.

7. Victoria Special Request Internal Migration Matrix

   → 18,769,017 individual records for all persons on their geographic changes in residence between 1996 and 2001.

   → No. of variables: 7 variables (tenure, household type, age, dwelling structure, household income, reference person indicator)

   → Spatial geography: (determined to approximate different types of housing markets according to settlement classification); Victoria classified into 11 broad migration/housing market areas plus 'rest of Australia' (consisting of all other states) forms a twelfth residual zone.

8. Journey to Work Matrix 2001 (by SLA)

   → Unit of analysis: Australian SLAs

   → No of variables: counts by SLA of all employed persons 15 years of age or over by their SLA of work and their SLA of usual residence on census night 2001.

→ Comment: this data file is not able to be merged with the 'Master All State SLA' file because of the sheer magnitude of the resultant file. Two different self-containment indices were computed and added to the 'Master All State SLA' file.

A full list of all original ABS data sources and products used to construct the various databases is presented in Appendix 2.

Having explained the development and composition of the database and settlement classification used to represent non-metropolitan housing markets, Chapter 3 presents data on some essential components of housing: dwelling stock, commencements, and dwelling type.

Figure 2.1: Australian non-metropolitan settlement types
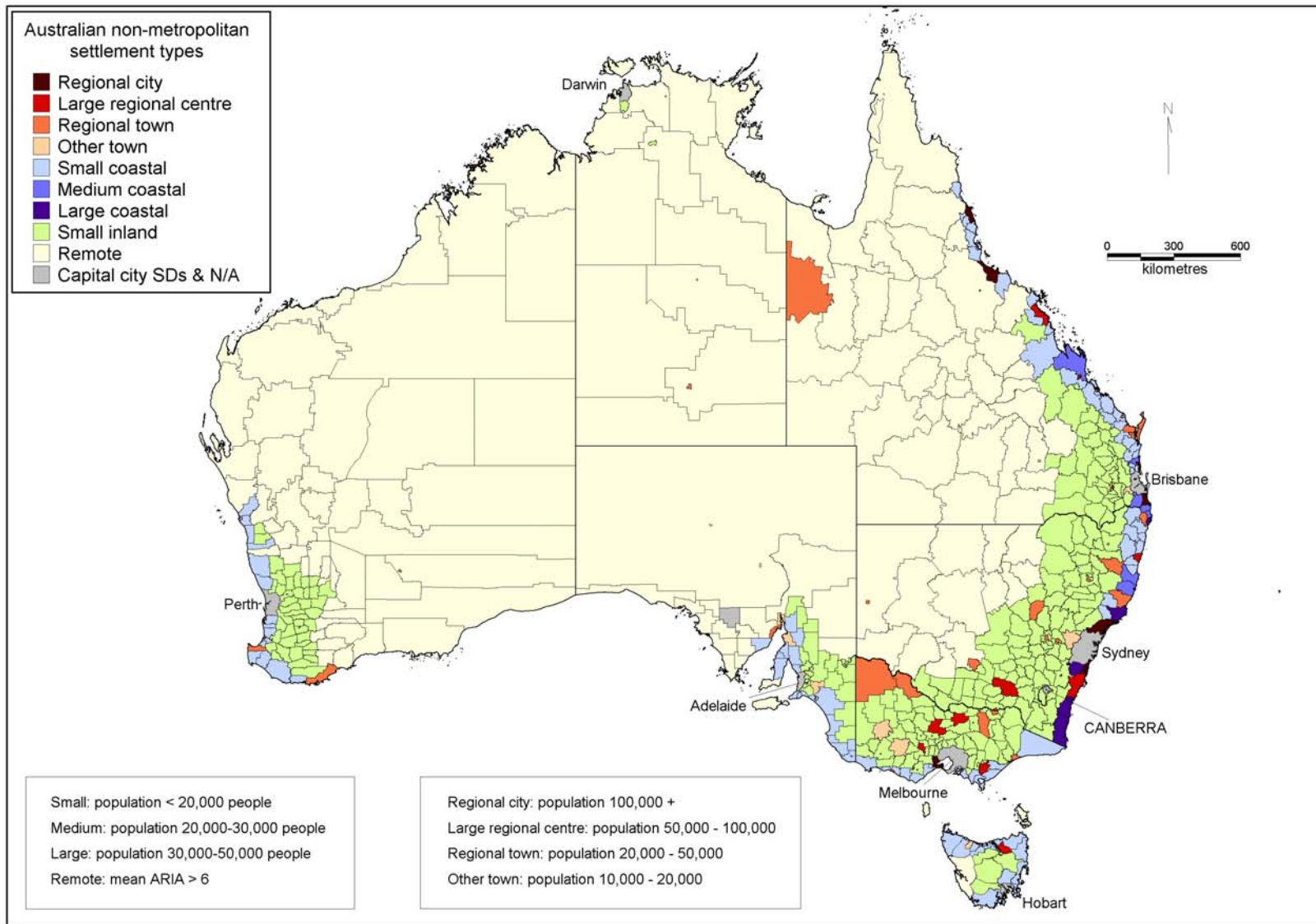
Source: Classification derived by authors from 2001 ABS Census of Population and Housing data: digital boundaries from ABS Census Basics CD Rom (Cat. No. 2045.0)

3   HOUSING STOCK AND BUILDING ACTIVITY

3.1   Data sources and issues

In this chapter, trends in basic dwelling stock and building activity are examined. These themes are explored using data sourced from the ABS Census of Population and Housing Time Series Profile (TSP) and the ABS Integrated Regional Database (IRDB, 2004 version). Table T18 from the Time Series Profile provided the data for the number of private dwellings, both occupied and unoccupied on Census night, and also the structure of these dwellings, for example, separate house or a flat, unit or apartment. The TSP provides data for the latest three censuses where the classifications are comparable over these years and the data are grouped to 2001 SLA boundaries. When variable definitions and categories were consistent, minimal 'hands-on' manipulation was required before being integrated with the larger non-metropolitan housing market database.

On the other hand, a significant effort was required to format the building activity data that were sourced from the ABS Integrated Regional Database (IRDB). The IRDB holds data on building activity relating to: the number of commencements of houses and other dwelling types (private and public); the number of building approvals for new houses and other residential dwelling types and; the dollar value of these building approvals. Two main data issues prevented a 'seamless' integration of this information into the greater non-metropolitan database: temporal boundary changes and incomplete data. The IRDB provides data on a range of both census and non-census related variables, at not only a range of spatial scales, but also a variety of editions of the ASGC[7]. (Appendix 3 shows the summary information provided for 'dwelling commencements' within the IRDB). Although building activity data for the period 1991-2001 are accessible in the IRDB, it is not possible for the program to aggregate these figures for all years to the 2001 SLA scale. Therefore, while the building information was available for each year of the ten-year period, the spatial units at which it was accessible were not immediately or easily comparable to those in the greater non-metropolitan database. Furthermore, the data were incomplete for some states and for some variables over the time frame. Consequently, the time required to address these problems restricted the analysis of building activity data to 'total private house commencements' for the six years 1996 to 2001. Formatting even this relatively small segment of the available building activity data demanded a substantial amount of laborious manipulation of SLA level data on a state-by-state basis. By comparison, the case study method, which examines particular towns or regions, or geographic based studies using much larger spatial units than SLAs, are both less time consuming in data development and analysis.

3.2 Dwelling stock

The spatial diversity evident in the demographic features described in chapter one appears again in the geography of private dwelling stock in non-metropolitan Australia. Figure 3.1 reveals the percentage change in total number of private dwellings of all types between 1991 and 2001. Persistent 'rural decline' is evident in areas of extensive agriculture (such as western Victoria), extensive pastoralism (such as far west New South Wales), logging (south west Western Australia) and mining (western Tasmania and parts of outback Western Australia). This may reflect the removal of mobile or non-permanent dwellings (cabins, mobile homes, caravans, etc.), rather than traditional houses or flats, and relates to the loss of itinerant labour

---

[7] The Australian Standard Geographical Classification (ASGC) is used by the ABS for the collection and dissemination of their data and statistics. The boundaries are periodically reviewed and updated. The IRDB holds 19 versions of the ASGC from 1991 onwards.

and a relatively mobile group of service providers. In general, most SLAs experienced some growth, with areas experiencing high population increases having the greatest growth in dwelling stock. The coastal fringe throughout almost all of Australia generally experienced high growth of more than twenty per cent (except for western Tasmania and King Island). Peri-urban and provincial centres also had rapidly growing dwelling stocks. Although somewhat misleading given the enormous size of the SLAs and their small populations, large areas of tropical northern Australia experienced high growth in total dwelling stocks. Relatively low growth was common throughout inland (but not remote) Australia, where the existing dwelling stock appears adequate to meet the population growth and shifting age structures noted in chapter one. The study period also experienced remarkable dynamism during the inter-censal period in relation to change in total dwelling stock. The geography reveals broadly similar numbers, but often different SLAs experiencing growth or decline in dwelling stock. In general, the pattern during 1991-1996 (Figure 3.2) was much more polarised, than that evident during 1996-2001 (Figure 3.3). The earlier period saw a geography of low growth or absolute decline dominating inland and remote Australia along with high coastal growth (especially along tropical coasts) suggestive of the alarming stereotypical images of coastal growth and rural decline widely portrayed in the academic and popular literature at the time (Wulff et al., 2005). By the later period, 1996-2001, the extremes had lessened. Growth in dwelling stock was far more common, especially throughout outback Australia (and presumably with the mineral boom that continues to stress housing markets today), and absolute decline was not as widespread. Even the high growth on the coastal fringe typical of the first half of the 1990s had cooled, being replaced more typically with only low to medium growth (0-20 per cent).

Figure 3.1: Non-metropolitan percentage change in number of private dwellings, 1991-2001
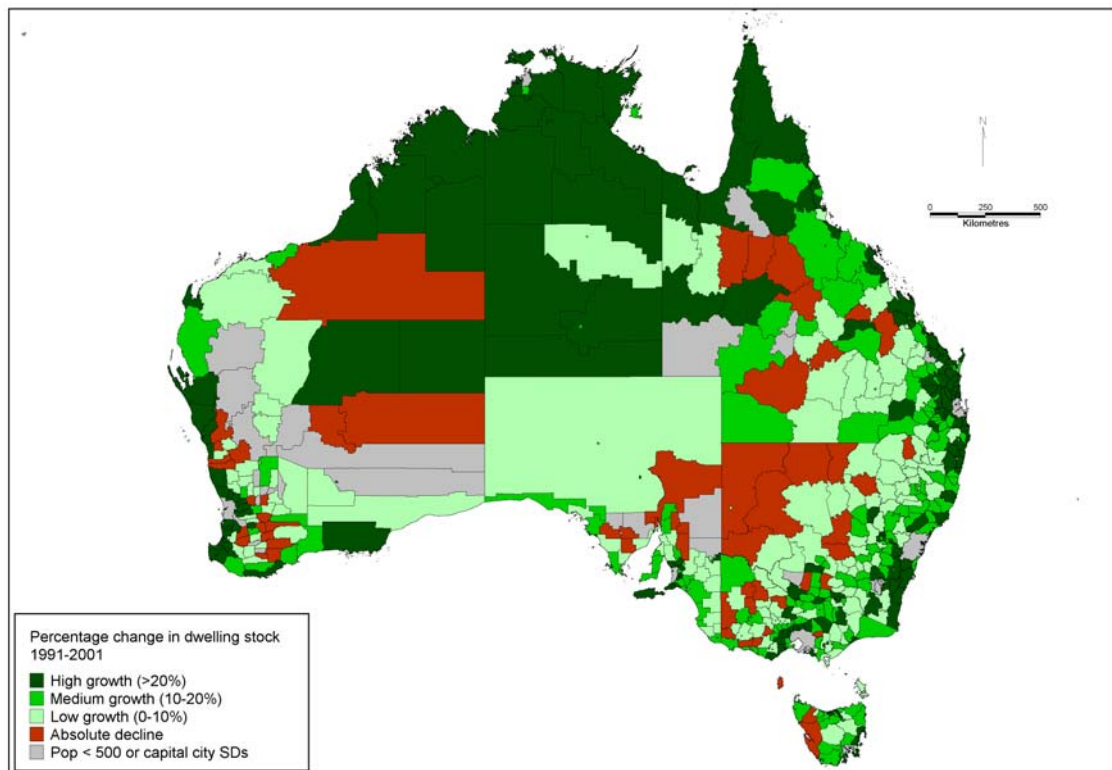
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 1991 & 2001 (dig. bounds. ABS Census Basics (cat. no. 2045.0)

Figure 3.2: Non-metropolitan percentage change in number of private dwellings, 1991-1996
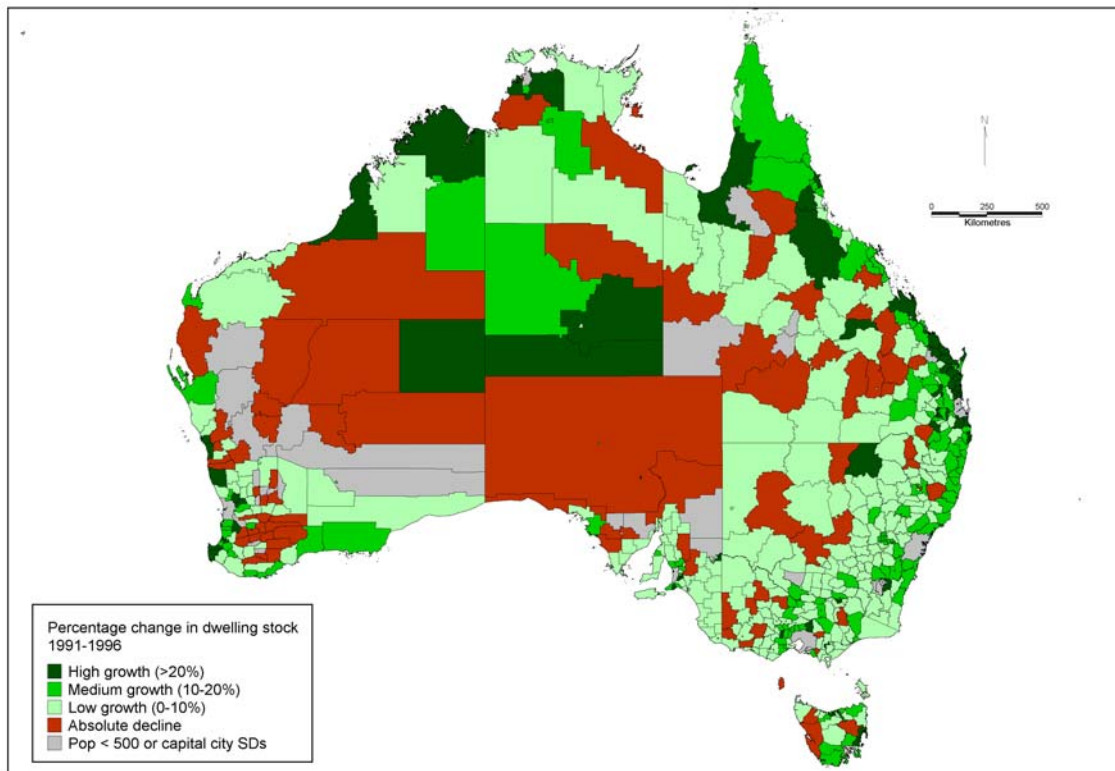
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 91 & 96 (dig. bounds. ABS Census Basics (cat. no. 2045.0)

Figure 3.3: Non-metropolitan percentage change in number of private dwellings, 1996-2001
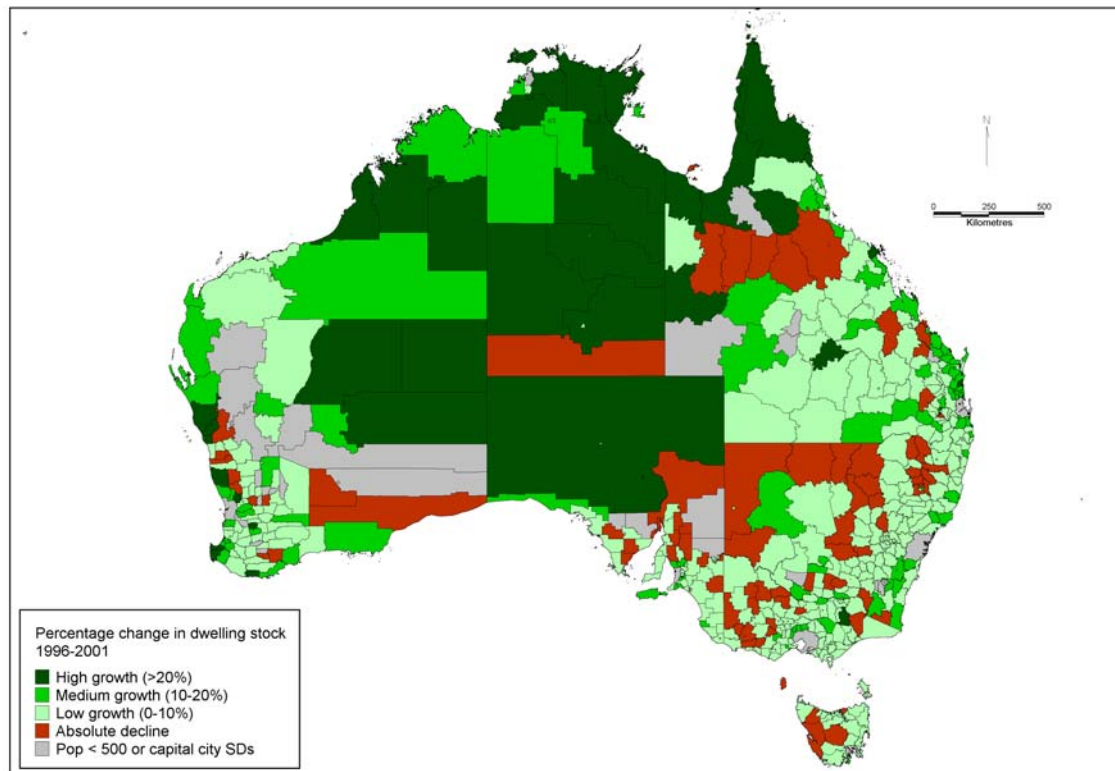
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 96 & 01 (dig. bounds. ABS Census Basics (cat. no. 2045.0)

Presenting dwelling stock by settlement type, Table 3.1 shows that half of the almost three million dwellings in non-metropolitan Australia during the study period were located in just fifty urban centres: those comprising the 'regional cities', 'large regional centres', and 'regional towns'. The other half was dispersed over a vast area, mainly in the small country towns that dominate settlement in the other six major settlement types (i.e. not counting the 'excluded' category). Between 1991 and 2001, the dwelling stock grew by 21.6 per cent, or over half a million dwellings, with the fastest growth (of approximately 25-36 per cent) being concentrated in the coastal areas and 'regional cities'. The growth in dwelling stock, in every category, was considerably less in the latter half of the decade, except in remote regions. In addition, the latter half of the decade experienced much less polarisation in growth, especially with substantial decreases in growth in coastal regions and 'regional cities'. The high proportion of unoccupied dwellings in small coastal and large coastal settlements (16-20 per cent compared to the non-metropolitan average of about 13 per cent) is most likely due to high percentages of holiday homes. Remote settlements experienced some significant growth in unoccupied dwellings between 1991 and 2001 (13.8 (not shown) to 16.8 per cent) becoming the third ranked type. Presumably this was for reasons other than unoccupied holiday homes, and was more likely a reflection of the population decline in many remote communities (see Figure 2.1).

Table 3.1: Number of households and all private dwellings, 1991 and 2001, frequencies and percentage change by non-metropolitan settlement type

	Households			All private dwellings				
	1991	2001	% change 91-01	1991	2001	% of non-metro stock	% change 91-01	% unoccupied 2001
Regional cities	514,704	679,989	32.1	572,857	746,767	24.9	30.4	8.9
Large regional centres	250,092	293,672	17.4	279,022	328,521	11.0	17.7	10.6
Regional towns	309,964	371,182	19.8	340,567	412,524	13.8	21.1	10.0
Other towns	65,872	70,362	6.8	72,290	78,783	2.6	9.0	10.7
Small coastal	258,415	321,818	24.5	324,247	403,674	13.5	24.5	20.3
Medium coastal	51,039	69,907	37.0	57,836	78,571	2.6	35.9	11.0
Large coastal	77,011	105,024	36.4	94,087	124,748	4.2	32.6	15.8
Small inland	491,361	552,555	12.5	565,248	641,681	21.4	13.5	13.9
Remote	137,518	153,338	11.5	159,495	184,192	6.1	15.5	16.8
Non-metro Aust	**2,155,976**	**2,617,847**	**21.4**	**2,465,649**	**2,999,597**	**100.0**	**21.6**	**12.7**
Metro Aust	**3,696,151**	**4,453,365**	**20.5**	**3,983,841**	**4,789,289**	**na**	**20.2**	**7.0**

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing 1991 and 2001.

The database allowed for analysis at a range of geographic scales and although the data are not shown here, a number of key observations are noted below at the state and regional scale.

3.2.1 State Level

Two broadly distinctive groups can be identified at the state level: slower versus faster/rapid growth in total dwellings (occupied plus unoccupied). Those recording slower growth as a percentage of 2001 dwelling stock were New South Wales (15.5

per cent), Victoria (12.9 per cent), South Australia (11.7 per cent) and Tasmania (10.8 per cent). Those with faster growth as a percentage of 2001 dwelling stock were Queensland (25.1 per cent), Western Australia (21.6 per cent) and the Northern Territory (21.8 per cent).

Queensland's non-metropolitan region led the states in the growth in the absolute number of dwellings between 1991 and 2001: an additional 211,000 dwellings - around 50,000 more dwellings than New South Wales and nearly 3 times as many as non-metropolitan Victoria. Furthermore, non-metropolitan Queensland was the only non-metropolitan region where the percentage growth in dwellings fell below the growth in the number of households (33.5 per cent in the former versus 34.5 per cent household growth rate). In all states, nonetheless, growth in the actual number of dwellings exceeded growth in the number of households. The slowest growth rate in the number of non-metropolitan dwellings was in Tasmania.

3.2.2 Coastal, inland and remote level

All coastal areas, regardless of size, experienced dwelling growth rates greater than their state non-metropolitan rate.

In New South Wales and Queensland (the only states with settlements classified as 'large' coastal regions), the highest rates of dwelling stock growth were associated positively with the population size in coastal regions. Nevertheless, inland and remote areas contrasted with these trends. Only in South Australia was the rate of dwelling growth greater in small inland regions than the aggregate state figure, and only in the Northern Territory was the rate of dwelling growth in remote areas greater than the aggregate state figure. In Tasmanian remote areas there was an absolute decline of about 69 dwellings between 1991 and 2001 (1.5 per cent of 2001 stock).

The biggest differences in the coastal, inland and remote regions when compared to the state non-metropolitan figures were in New South Wales and Queensland coastal regions. In these two states, coastal regions clearly dominated dwelling stock increases: the New South Wales non-metropolitan average stock increase of around 18 per cent was easily exceeded in both medium coastal areas (28.5 per cent) and large coastal areas (32.9 per cent); in Queensland medium coastal areas dwelling stock increased by 49.3 per cent compared with the state-wide non-metropolitan average of 33.5 per cent. In Western Australian this trend was even more apparent: the state-wide non-metropolitan rate of dwelling stock growth between 1991 and 2001 was 27.5 per cent; in small coastal regions, however, this rate was close to 44 per cent.

3.2.3 Regional cities, centres and towns

In New South Wales, the rate of dwelling stock growth ranged between only 0.4 per cent (38 dwellings) in the remote town of Broken Hill where the number of households actually declined by about 450 over the 10 year period, to around a 30 per cent increase in dwellings in Queanbeyan near the Australian Capital Territory (3,117 dwellings).

In four settlements in New South Wales, the growth rate of households exceeded the growth rate in dwelling stock. The greatest margin was in the coastal centre of Shoalhaven that experienced a household growth rate of nearly 31 per cent but a dwelling growth rate of only 24 per cent. Growth in the actual number of dwellings did exceed the number of households. Only in the town of Griffith did growth in the number of dwellings fall below the growth in the number of households – by 110 dwellings.

In Victoria, stock growth rates range from 4 per cent in the small town of Ararat where, like Broken Hill, the number of households declined over the decade (by around 40 households), to the most rapid increase of 32 per cent in the Murray River town of

Wodonga. This was more than twice the rate of growth for non-metropolitan Victoria as a whole.

As a large regional centre, Latrobe did not fare well in terms of dwelling stock increase, due in part to significant de-industrialisation especially associated with restructuring of coal-winning and electricity generation. Over the decade, the number of dwellings grew by only around 6 per cent, a figure well below the state-wide non-metropolitan average of about 15 per cent. Stock growth rates in the remaining four large settlement types (Geelong, Bendigo, Ballarat and Shepparton) were all above the Victorian non-metropolitan average.

In Queensland, the rate of dwelling stock growth ranges between 6.6 per cent in the remote mining town of Mt Isa, to nearly 54 per cent in the coastal town of Hervey Bay.

Some of Australia's greatest non-metropolitan growth rates in dwelling stock were experienced in coastal areas of Queensland, namely Hervey Bay (53.8), the Sunshine Coast (53.5 per cent), the Gold Coast (46.8 per cent), and Cairns (43.7 cent). In all of these settlements except Cairns, the rate of household growth was greater than the rate of dwelling stock growth. In the Gold Coast, furthermore, growth in the number of households was also greater than growth in the total number of dwellings (by 1,370 households).

In South Australia, Port Augusta appears as the only town/centre (in non-metro Australia) to have experienced a decline in the number of dwellings over the ten-year period. Additionally, when dwelling stock figures for 1996 were examined, these show a loss of around 130 dwellings between 1996 and 2001. In South Australia, the regional town of Mt Gambier and the smaller coastal town of Port Lincoln experienced the greatest rates of stock growth over the decade (16.8 and 15.5 per cent respectively).

The most rapid rates of dwelling stock growth in Australian non-metropolitan centres between 1991 and 2001 were in the Western Australian regional towns of Mandurah and Busselton: 55.5 and 63.1 per cent respectively. In both of these towns, the rate of household growth was greater than the rate of dwelling growth, however, growth in the absolute number of dwellings was greater than growth in the number of households.

In comparison, Tasmanian regional towns experienced some of the lowest rates of dwelling stock growth in Australia, ranging only between about 5 to 7 per cent.

Household formation is a critical indicator of housing markets, and arguably even more important for planning purposes than dwelling stock or population (Wulff et al. 2005). Analysis of household growth is shown in Table 3.1. In 2001 there were approximately 2.6 million households in non-metropolitan Australia, a growth since 1991 of 21 per cent, or approximately half a million households. This growth is only slightly smaller than private dwelling stock that includes unoccupied dwellings i.e. not inhabited by 'households'. Between 1991 and 2001, households grew more than private dwelling stock in those settlement types characterised by significant population growth: regional cities and coastal regions (the figures being identical for 'small coastal regions'), presumably with many unoccupied dwellings in those areas becoming occupied within the study period given the large demand for housing there. Along with rental properties, the habitation of previously unoccupied dwellings in settlements with rising housing markets provides an important, but possibly short-lived, effect before new housing commencements begin to surge.

In terms of the tenure of the approximately 2.6 million households in non-metropolitan Australia in 2001 (Table 3.2), about 42 per cent were owners, 24 per cent were purchasers (i.e. mortgagees), 21.5 per cent were private renters, only about 4 per cent were public renters, and the rest were in miscellaneous other or 'not stated' categories. Compared to 1991, owners had declined and both purchasers and private

renters had increased respectively by about two percentage points (not shown). Private rental was proportionately strongest in remote regions and weakest in small inland settlements. Purchasers were disproportionately low as a category in 'large coastal' and 'remote' settlements. The percentage change over the decade in private rental was particularly strong (24-49 per cent) in those areas already noted as experiencing strong population growth: 'regional cities', large regional centres and coastal areas (especially moderate and large coastal settlement types). The percentage growth in public rental was only strong in large coastal settlements, while large declines (approximately 15-26 per cent) were experienced in 'regional' and 'other' towns and small inland and remote settlements.

Table 3.2: Selected non-metropolitan tenure indicators, 1991 and 2001

	Per cent 2001				Percentage change 91-01 (in no. of households)			
	Owner	Purchaser	Private rent	Public rent	Owner	Purchaser	Private rent	Public rent
Regional cities	38.3	24.6	24.6	4.6	19.5	37.2	49.4	14.8
Large regional centres	40.7	26.0	21.9	5.0	12.9	20.4	25.3	2.1
Regional towns	38.2	25.6	22.8	6.1	12.9	32.5	30.2	-14.7
Other towns	41.6	24.7	18.4	8.8	6.5	16.3	19.2	-25.7
Small coastal	46.0	24.3	18.2	2.2	18.9	40.6	24.2	-7.6
Medium coastal	45.3	23.7	21.0	1.7	26.1	55.3	46.5	14.1
Large coastal	48.3	19.6	21.6	2.9	33.7	47.3	33.3	47.8
Small inland	46.6	24.3	16.8	2.9	10.8	23.3	9.4	-21.3
Remote	35.0	14.1	29.1	4.2	19.7	27.4	2.3	-23.5
Non-metro Aust	41.8	23.9	21.5	4.2	16.0	31.2	27.3	-6.5
Metro Aust	38.6	28.0	21.5	4.7	21.0	14.9	29.5	-2.3

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing, 1991 and 2001

3.3   New private house commencements – 1996 to 2000

This section reviews the annual number of new house commencements for each of the years 1996-2000. This information, although available in the IRDB, appears at different spatial aggregations for different years. In order to include commencement information in the database in a consistent spatial unit, it was necessary to re-work the data significantly. For this reason, we only include information on house commencements. A substantial amount of data related to flats and units was missing, which necessitated omitting this variable in the database. The original commencement figures are based on information provided to ABS by local and other government authorities of work that has officially commenced on separate houses.[8] A building has 'commenced', according to ABS, 'when the first physical building activity has been performed on site in the form of materials fixed in place and/or labour expended - this includes site preparation but excludes delivery of building materials,

---

[8] Starting with the March quarter 2002, ABS collected this information by means of a quarterly Building Activity Survey of the number of dwelling units commenced during the previous quarter and derived from a sample of private sector residential building jobs valued at $10,000 or more.

the drawing of plans and specifications and the construction of non-building infrastructures, such as roads' (ABS 2006).

Table 3.3 provides the number of new house commencements for the years 1996-2000 for each settlement type. In general, new house commencements steadily increased over the five year period. Reflecting the size of their resident populations, 'regional cities' recorded the highest levels of commencements and 'other towns' the lowest.

Table 3.3: Number of new house commencements by settlement type: 1996 to 2000*

	New house commencements					Total
	1996	1997	1998	1999	2000	
Regional cities	10,035	11,047	11,874	12,024	13,315	58,295
Large regional centres	3,715	3,585	4,376	4,551	5,035	21,262
Regional towns	5,326	5,356	6,123	6,224	6,796	29,825
Other towns	593	620	711	603	789	3,315
Small coastal	6,827	6,272	6,657	6,476	7,521	33,752
Medium coastal	1,501	1,568	1,628	1,319	1,595	7,611
Large coastal	1,855	2,061	2,370	2,371	2,609	11,266
Small inland	6,358	6,443	6,814	6,859	8,973	35,447
Remote	1,491	2,127	2,338	2,164	1,890	10,010
Non-metro Aust	37,702	39,078	42,891	42,593	48,524	210,788
Metro Aust	47,883	51,808	61,707	62,616	72,721	296,734

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS IRDB.

*Commencement data were not available for the Northern Territory

The information in Table 3.4 shows that the annual growth rate in new commencements varied considerably each year. Commencement activity was generally the most stable in the 'regional cities' over the period, growing at 7-10 per cent annually (except for a dip in the growth rate in 1999). Commencement activity for large regional centres peaked in 1998, declined, and then increased again in 2000. In small and medium coastal communities, the annual growth rate expanded in 2000, revealing growth on the previous year rising between 16-20 per cent. The most notable feature of annual commencement activity for settlements classified as 'other towns' and 'small inland' is the apparent expansion in commencement activity in 2000. Increases in new house commencements from the previous year were significantly higher on previous years, reaching 30 per cent. In 1997, remote settlements recorded a 42 per cent increase in commencement activity from the previous year. Thereafter, annual growth in remote settlements slowed considerably and declined.

Table 3.4: Annual growth rate in number of new house commencements by settlement type: 1996 to 2000*

	Annual growth rate			
	96-97	97-98	98-99	99-00
Regional cities	10.1	7.5	1.3	10.7
Large regional centres	-3.5	22.1	4.0	10.6
Regional towns	0.6	14.3	1.6	9.2
Other towns	4.5	14.6	-15.2	30.8
Small coastal	-8.1	6.1	-2.7	16.1
Medium coastal	4.5	3.8	-19.0	20.9
Large coastal	11.1	15.0	0.1	10.0
Small inland	1.3	5.7	0.7	30.8
Remote	42.6	9.9	-7.5	-12.6
Non-metro Aust	3.6	9.8	-0.7	13.9
Metro Aust	8.2	19.1	1.5	16.1

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS IRDB.

*Commencement data were not available for the Northern Territory

Figure 3.4 shows the level of new house commencement for six selected small coastal towns (ranging in population between 17,000-24,000 residents). The graph reveals the rapid and high level of commencement increases in the smallest of these six settlements, Busselton in Western Australia. Busselton was one of the most rapidly growing regional towns in Australia, with a population growth rate between 1991 and 2001 of 62.1 per cent compared, for example, to the regional town with the second highest level of activity, Bairnsdale-Lakes Entrance, Victoria, which only grew by 9.5 per cent during the same period[9]. Busselton's population is also younger than Bairnsdale's and the other coastal towns with just 13 per cent of its population aged over 65 years in 2001 compared with 2001. The other coastal towns – Whyalla, Geraldton, Port Pirie and Burnie, all had similar levels of commencements during this period, but considerably lower than Busselton. Whyalla, for example, exhibited a negative 16.1 per cent population growth rate. Its labour force declined by 26.2 per cent compared with an enormous growth of 74.6 per cent in Busselton's labour force between 1991 and 2001. Bairnsdale-Lakes Entrance labour force growth was positive, although considerably lower at around five per cent for the decade.

In regard to inland towns, the number of new house commencements in Griffith surpassed the other inland towns over the entire period, and accelerated in 2000. Compared to the other inland towns shown in Figure 3.5, Griffith's population growth was far greater (at 15.6 per cent) and its labour force was also expanding. The results of this growth can be seen in the level of new house commencements. Broken Hill (NSW) and Mount Isa (Qld) experienced relatively low levels of house commencements, commensurate with declining populations (-15.0 and -12.8 per cent respectively) and declining labour markets (-20.6 and -12.0 per cent respectively).

Figure 3.6 confirms the strong positive relationship between commencement activity and population and labour market growth in different inland towns. Albany's relatively high number of commencements appears to be associated with its 19 per cent population growth and 21 per cent labour market growth. At the other end of the

---

[9] All population and labour market figures reported in the discussion have been calculated using data available on the 'All State Settlement' data file.

scale, slow building activity in Devonport corresponds to what might be expected in a town undergoing population and labour market decline.

Figure 3.4: New house commencements 1996 to 2000: selected smaller coastal towns of similar population size in 1996
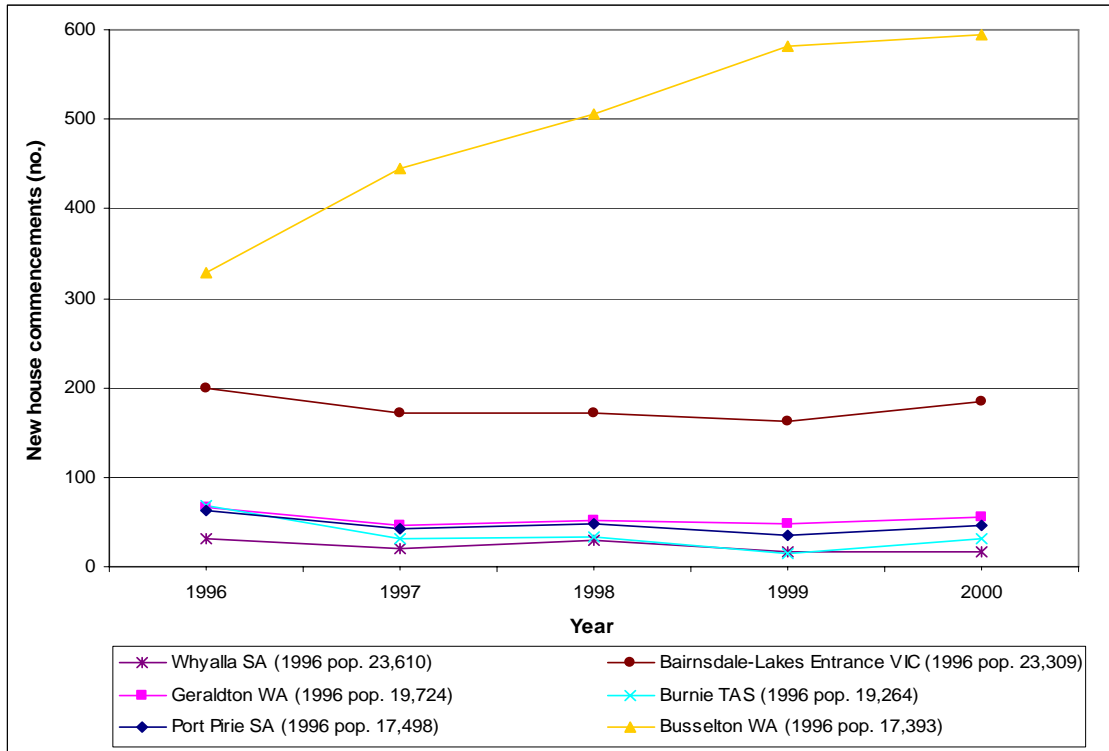
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS IRDB.

Figure 3.5: New house commencements 1996 to 2000: selected inland towns of similar population size in 1996
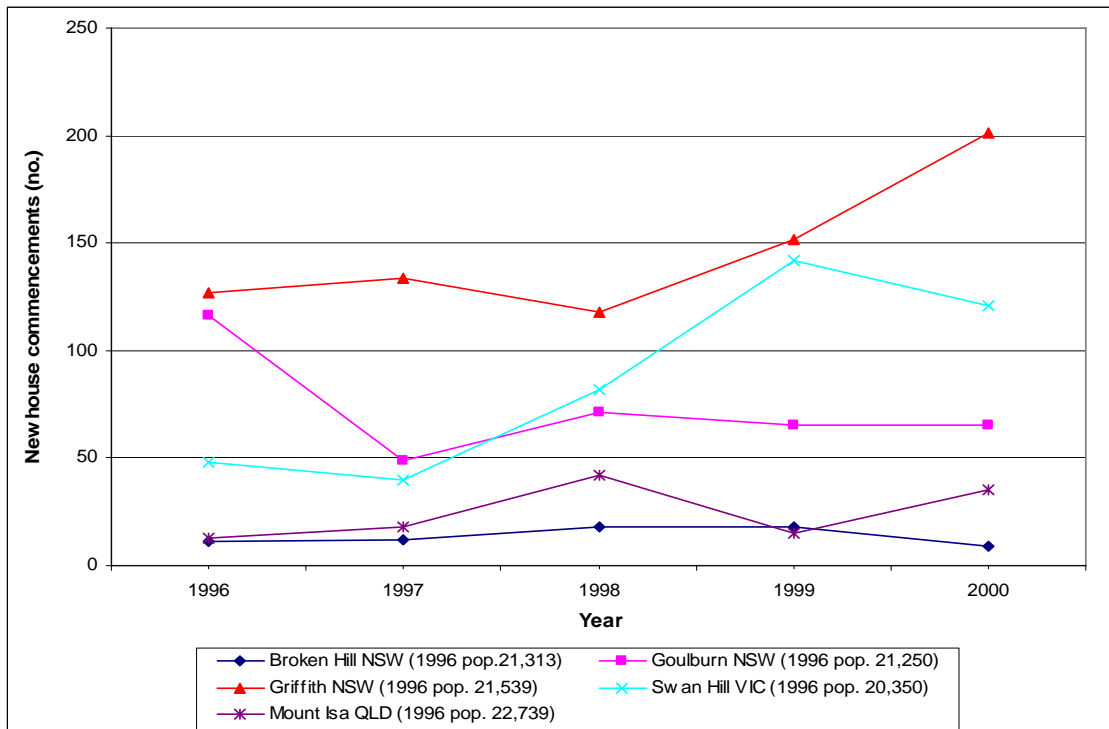
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS IRDB.

Figure 3.6: New house commencements 1996 to 2000: selected inland towns of similar population size in 1996
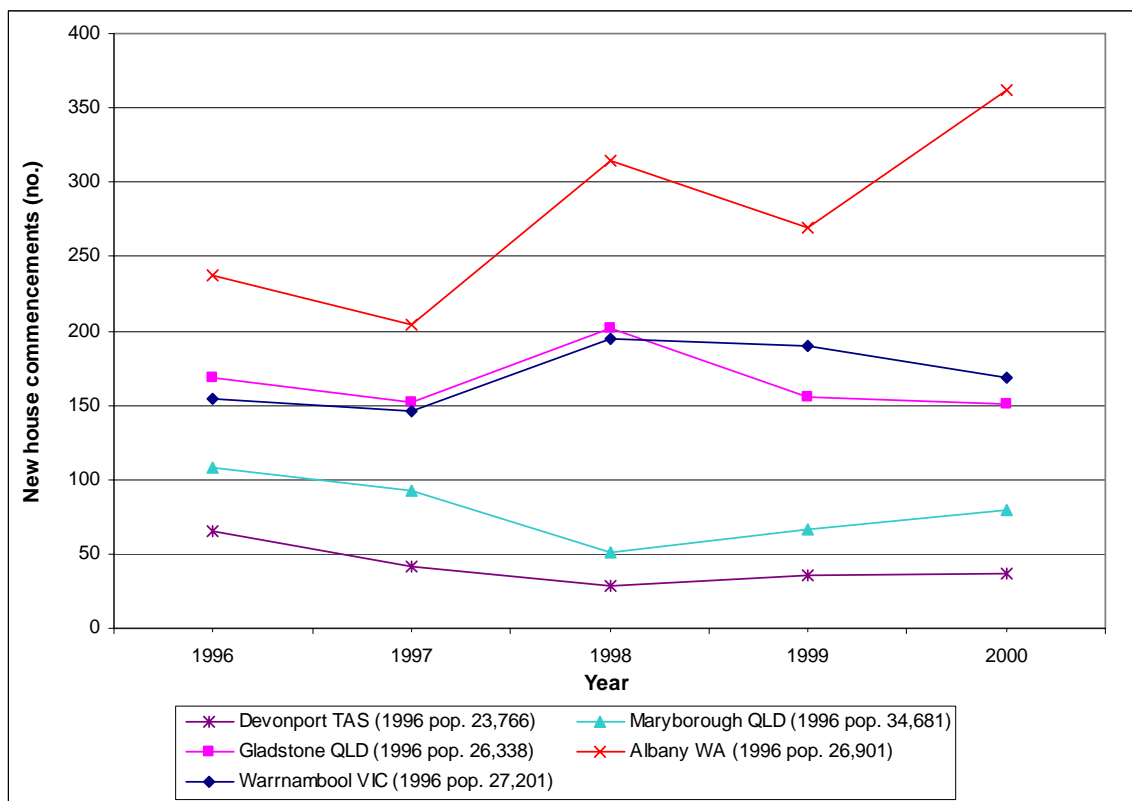
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS IRDB

3.4 Dwelling type

Table 3.5 shows that separate houses dominated the dwelling stock of non-metropolitan Australia during the study period. This is most apparent in the small inland settlements where, on average, 90 per cent of the dwelling stock consisted of detached houses in 2001 (compared to the non-metropolitan average of 80.7 per cent). By contrast, those settlement types with the lowest percentage of detached dwellings (at approximately 70–75 per cent) were the large coastal, regional cities and remote categories. The distribution of 'other dwellings' (comprising caravans, cabins, house boats, tents etc) was remarkably uniform across settlement type in 2001, with a narrow range of 3-6 per cent of dwelling stock, except for the remote areas where the figure is approximately 16 per cent. The flats, units and apartments category increased marginally (by 1.8 percentage points) over the decade, with both the magnitude and rate of growth being greatest in regional cities and large coastal settlements. Although the 'flats, units and apartments' base level varied considerably across settlement types, figure 3.7 reveals a remarkably consistent picture of rapid growth. Throughout all non-metropolitan settlement types, growth in this category averaged 39 per cent but was greatest in medium and large coastal settlements and regional cities (approximately 46-58 per cent over the decade). In all settlement types, the difference in the rate of growth between higher density dwellings (flats/units/apartments) and separate houses is striking, and suggests major activity in that segment of the housing market.

Table 3.5: Dwelling types in non-metropolitan settlements, 1991 and 2001

	Total private dwellings		% sep houses		% flats, units apartments		Share (%) chg 91-01	
	1991	2001	1991	2001	1991	2001	Houses	FUAs
Regional cities	572,857	746,767	74.2	71.1	21.4	25.4	-3.1	3.9
Large regional centres	279,022	328,521	83.5	83.1	12.6	13.5	-0.4	1.0
Regional towns	340,567	412,524	79.2	79.4	15.8	16.7	0.2	0.9
Other towns	72,290	78,783	82.3	82.9	13.7	14.2	0.5	0.5
Small coastal	324,247	403,674	87.2	87.7	6.3	6.8	0.5	0.5
Medium coastal	57,836	78,571	83.9	84.2	8.1	9.5	0.3	1.3
Large coastal	94,087	124,748	70.1	70.6	21.1	23.3	0.4	2.2
Small inland	565,248	641,681	90.0	90.1	5.5	6.1	0.1	0.6
Remote	159,495	184,192	75.4	75.0	9.1	9.3	-0.4	0.1
Non-metro Aust	2,465,649	2,999,461	81.7	80.7	12.7	14.5	-0.9	1.8
Metro Aust	3,983,841	4,789,289	73.6	71.1	24.0	27.0	-2.5	3.0

Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing, 1991 and 2001

Figure 3.7: Percentage growth in separate houses, flats, units and apartments, and total private dwellings: 1991 to 2001
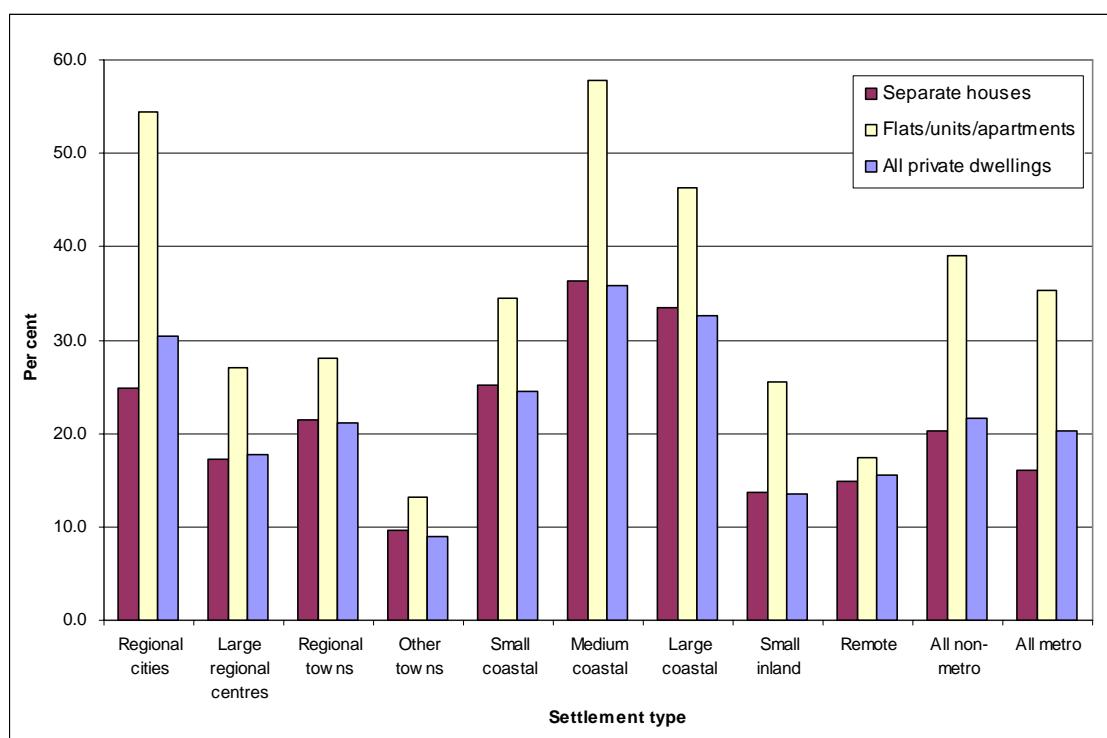
Source: 'All State Settlement' database, School of Geography and Environmental Science, Monash University, derived from ABS Census of Population and Housing, 1991 and 2001

Having described some of the major trends in dwelling stock, dwelling type and commencements, we now move to analyse non-metropolitan housing markets in terms of property prices in the following chapter.

4   HOUSING MARKETS AND PROPERTY PRICES

The use of sale prices as the main parameter defining a housing market is an established practice within the field of housing economic research (Maclennan and Whitehead 1996). Property prices, particularly when examined over time or compared across different locations, provide the most direct indicator of housing market performance. This chapter presents information on price trends for houses and flats between 1991 and 2001 for the different settlements types in Victoria, South Australia and Western Australia. It also explores, through the use of several new measures and ratios, the effect of population and housing changes on house and flat prices.

In order to obtain sale price data for this study, all state and territory government offices holding this information were contacted. We requested unit-record level residential sale files for the calendar years 1991, 1996 and 2001. Four state government departments responded positively and provided the information[10]. The following government departments supplied property sales data:

→ LANDATA, Victorian State Government Department of Sustainability and Environment

→ Land Services Group, South Australian State Government Department for Administrative and Information Services

→ Regulation and Valuation Research, Western Australian State Government Department of Land Information

→ Land and Property Information, New South Wales Government Department of Lands

It was not possible, however, to analyse the data provided by the NSW Government Department of Lands. The data for the three calendar years were provided in a number of different formats in over 1,200 separate files. Consequently, there was insufficient time available to collate and format these files for inclusion in our non-metropolitan database. The data presented in this section of the report, therefore, cover Victoria, South Australia and Western Australia only.

Unit-record level data were requested for two main reasons: i) to allow the aggregation of the data to our chosen spatial unit of analysis, the SLA level, and subsequently to the regions defined in our classification of non-metropolitan Australia; and ii) to allow more detailed analysis of price trends - for example, changes in the volume of sales of different dwelling types and the examination of price quartile patterns. The following data fields were requested: sale price; date of sale; land-use code/nature of property (e.g. house or flat or farm etc, commercial sales were not requested); road address; suburb/locality; postcode; local government area (if available); and any other location information (for example, 'Parish') that would help to locate the sale within a 2001 SLA boundary. The ABS National Localities Index[11] was used to assign SLA codes to each sale record based on a 'match' between the ABS listed locality (and thus the corresponding SLA code), and the suburb/locality listed in the property data. In instances where a duplicate locality was identified in the ABS Localities list, the LGA or postcode fields in the property sales data were used to assign the sale record with the correct SLA code. Based on these SLA codes, each

---

[10] Although the Queensland Government Department of Natural Resources, Mines and Water responded to our request, their data were not available at the unit-record level and, moreover, were available only in a hard copy format. The time that would be required to convert this data into the data base precluded its inclusion in the study.

[11] This index consists of a list of nation-wide localities/suburbs with the corresponding SLA code that the locality falls within. The ABS developed this product to assist users assign the Main Structure codes from the ASGC to address-based data (see ABS cat. no 1252.0.55.001).

sale was then assigned ASGC codes of larger spatial units (LGA, SSD, SD) and also codes relating to non-metropolitan settlement type and migration matrix region.

→ Date of sale – we consolidated the separate files for each of the three census years into one file

→ Address – we added spatial identification including SLA, SD (statistical division); settlement type and migration matrix classification.

→ Dwelling type (house or flat)

→ Sale price

From this information, we computed the following measures for each of our SLAs in the database for each census year:

→ Number of sales (houses)

→ Number of sales (flats)

→ Median sale price (houses)

→ Median sale price (flats)

→ Growth in median price

This chapter presents the general trends in property prices in non-metropolitan Victoria, South Australia and Western Australia in the decade under study.

Several features stand out in table 4.1. Turning first to small coastal settlements, the volume of sales generally accelerated in the last half of the decade, with sales, for example, in Victorian small coastal communities growing by 85 per cent during this period. Of the three states examined, the median sale price was highest in Western Australia reaching $140,000 in 2001. The median price rose greatly in Western Australia during the early 1990s, during which prices in Victoria and South Australia either rose slowly or recorded a slight decline. In contrast, the latter half of the decade was the period during which Victoria's small coastal median prices rose a robust 28 per cent.

In both Victoria and South Australia, the median house price in small coastal settlements exceeded the figure recorded in small inland settlements. The differential is particularly marked in Western Australia where the figure for small coastal settlements ($140,000) more than doubled that of small inland communities ($67,000). The opposite occurred in South Australia. In South Australia, the median house price in small inland settlements consistently out-ranked that of small coastal settlements in the three census years. Moreover, the volume of sales and the growth of sales over the period were greater than in small coastal, indicating much greater market activity in small inland compared with coastal communities.

Of the three states, only South Australia and Western Australia contained settlements classified as 'remote'. House sales in Western Australian remote communities escalated by over 60 per cent during the years 1991 to 1996. The volume of sales then declined slightly between 1996 and 2001, although prices still rose by a considerable 28 per cent. In addition, the number of sales and the median house price surpassed that recorded for the small inland communities.

The housing market performance of regional centres and towns varied considerably across different towns and also across the three states. In Victoria, Greater Geelong (the only regional city in this analysis) recorded the highest median house price in 2001 and also the most substantial house price growth between 1996 and 2001 (43 per cent). This was not the case, however, in 1991, when the median sale price of a house in Geelong was lower than that of Wodonga. In Victoria, the period 1991 to 1996 generally witnessed median house price decline (with the exception of slight price increases in Horsham and Swan Hill). In contrast, during the same period,

median house prices in the regional centres and towns of South Australia and Western Australia were all on the upswing. During the 1996 to 2001 period, house prices recovered in nearly all Victorian regional centres and towns. The exception is LaTrobe where, despite a large increase in the volume of sales (77 per cent between 1996 and 2001), the median house prices declined. These figures reflect the stark reality of a declining region where many homeowners preferred to sell and leave the area, despite the clearly declining market. In South Australia, a similar anomaly took place in Whyalla during the same period. Median house prices decline by 17.5 per cent between 1996 and 2001, yet the number of sales increased by over half.

Table 4.1: Property sales (houses only) by number, median sale price, and % change, 1991, 1996, 2001 by state and settlement type

State	Number of sales 1991	1996	2001	Median sale price ($2001) 1991	1996	2001	% change in sales 91-96	96-01	% median price change 91-96	96-01
Small coastal										
Victoria	2,113	2,588	4,791	$100,800	$97,440	$125,000	22.5	85.1	-3.3	28.3
South Australia	1,456	1,454	2,382	$76,860	$84,000	$100,000	-0.1	63.8	9.3	19.0
Western Australia	1,471	1,411	1,660	$74,340	$123,200	$140,000	-4.1	17.6	65.7	13.6
Small inland										
Victoria	4,680	6,198	9,728	$94,500	$90,720	$110,000	32.4	57.0	-4.0	21.3
South Australia	1,591	1,667	2,670	$94,500	$95,200	$115,000	4.8	60.2	0.7	20.8
Western Australia	791	1,151	1,273	$51,030	$60,480	$67,000	45.5	10.6	18.5	10.8
Remote										
SA remote	359	431	634	$63,000	$70,560	$85,000	20.1	47.1	12.0	20.5
WA remote	929	1,492	1,442	$74,340	$105,280	$135,000	60.6	-3.4	41.6	28.2
Regional Centres and Towns										
Victoria										
Ballarat	1,345	1,480	2,245	$97,650	$90,720	$123,000	10.0	51.7	-7.1	35.6
Greater Bendigo	1,111	1,389	2,261	$102,060	$96,320	$122,000	25.0	62.8	-5.6	26.7
Greater Geelong	2,249	2,757	5,253	$117,180	$103,600	$148,500	22.6	90.5	-11.6	43.3
Greater Shepparton	599	686	1,057	$112,140	$108,640	$136,500	14.5	54.1	-3.1	25.6
Latrobe	1,056	991	1,754	$80,325	$73,920	$70,750	-6.2	77.0	-8.0	-4.3
Warrnambool	352	454	629	$110,565	$109,760	$146,000	29.0	38.5	-0.7	33.0
Mildura	561	740	1,002	$97,020	$95,200	$130,000	31.9	35.4	-1.9	36.6
Ararat	107	127	239	$73,080	$60,480	$65,000	18.7	88.2	-17.2	7.5
Horsham	255	285	450	$94,500	$95,760	$108,000	11.8	57.9	1.3	12.8
Swan Hill	217	299	389	$90,090	$95,200	$95,000	37.8	30.1	5.7	-0.2
Wangaratta	276	358	468	$111,195	$104,720	$110,000	29.7	30.7	-5.8	5.0
B'sdale-Lakes Ent	395	404	879	$104,580	$103,880	$109,500	2.3	117.6	-0.7	5.4
Wodonga	375	427	723	$131,365	$120,960	$132,000	13.9	69.3	-7.9	9.1
South Australia										
Port Augusta	140	136	161	$61,110	$64,960	$65,000	-2.9	18.4	6.3	0.1
Port Lincoln	177	235	268	$88,200	$95,200	$132,000	32.8	14.0	7.9	38.7
Whyalla	247	169	263	$83,160	$103,040	$85,000	-31.6	55.6	23.9	-17.5
Murray Bridge	199	186	300	$84,357	$87,360	$90,000	-6.5	61.3	3.6	3.0
Mount Gambier	313	330	547	$94,500	$103,600	$120,000	5.4	65.8	9.6	15.8
Port Pirie	252	259	327	$49,455	$61,600	$65,000	2.8	26.3	24.6	5.5
Western Australia										
Albany	497	473	590	$92,610	$133,280	$150,000	-4.8	24.7	43.9	12.5
Bunbury	463	547	605	$97,020	$113,680	$135,000	18.1	10.6	17.2	18.8
Geraldton	301	284	279	$93,240	$94,080	$97,000	-5.6	-1.8	0.9	3.1
Kalgoorlie-Boulder	493	610	528	$81,900	$154,280	$132,250	23.7	-13.4	88.4	-14.3
Mandurah	1,282	850	1,770	$78,120	$123,200	$139,000	-33.7	108.2	57.7	12.8
Busselton	276	389	467	$100,800	$162,400	$173,500	40.9	20.1	61.1	6.8

In the regional centres and towns of Western Australia, housing market activity was greatest during the first half of the decade and then generally slowed. Prices, however, remained high relative to the other two states. By 2001, for example, Busselton registered the top median house price of all regional towns and centres examined - $173,500. Second among the regional centres and towns was another WA settlement, Albany, which had a median sale figure of $150,000.

Table 4.2 summarises median house sale prices by settlement type and state. They are presented in terms of rank order of the 1991 median value.

Table 4.2: Median house prices (1991 and 2001) by settlement type and by rank order

Settlement type*	Median House Price 1991 (in $ 2001)	Median House price 2001	Rank 1991	Rank 2001
Regional city (1)	$117,180	$148,500	1	1
VIC small coastal (16)	$100,800	$125,000	2	5
Large regional centre (4)	$97,020	$115,000	3	6
Regional town (13)	$95,760	$130,500	4	4
VIC small inland (65)	$94,500	$110,000	5	8
SA small inland (25)	$94,500	$115,000	6	7
Other town (7)	$81,900	$88,000	7	10
SA small coastal (17)	$76,860	$100,000	8	9
WA small coastal (19)	$74,340	$140,000	9	2
WA remote (48)	$74,340	$135,000	10	3
SA remote (18)	$63,000	$85,000	11	11
WA small inland (44)	$51,030	$67,000	12	12

* (number in brackets refers to the number of settlements in this category)

Source: 'Three State Property Settlement' file, held by the School of Geography and Environmental Science, Monash University, derived from Vic, SA, WA Valuer General unit record property sales data 1991 and 2001.

The only regional city (Geelong, Victoria) dominated non-metropolitan median house prices in 1991 and again in 2001. In both years, the median house price for Geelong was over double the figure recorded in the 12th placed settlement type (WA small inland). The rank order of both regional city (top) and WA small inland (bottom) remained the same over the decade. Other settlement types experienced shifts in the rank order of median house prices, most notably WA small coastal communities, which escalated from 9th place in 1991 to 2nd place in 2001. The median price in large regional centres slipped from 3rd place in 1991 to 6th in 2001. All four large regional centres are located in Victoria – Ballarat, Greater Bendigo, Greater Shepparton and LaTrobe and the downward slide in rank order may be due in large part to the declining property prices in LaTrobe. Regional towns (for example, Warrnambool, Mildura, Mount Gambier, Mandurah) median prices remained in a stable 4th rank.

In contrast to median house price figures and rank order information, the figures showing the 10 year percentage growth provide quite different information. The growth in house prices in Western Australia's small coastal and remote communities far outstripped the increases experienced in other settlement types. Housing prices in remote communities in Western Australia (stemming from the mineral boom and considerable expansion in coastal tourism and sea changers, including retirees) grew

more rapidly than in established regional towns or large regional centres, despite beginning from a lower price base.

Figure 4.1 shows that across the non-metropolitan regions of Victoria, South Australia and Western Australia, prices for houses rose on average by approximately 27 per cent. Small coastal communities in Victoria, often thought of as the quintessential 'sea change' areas, recorded only a small gain of less than a modest gain of around 24 per cent in house prices over the decade. This reflects the high base figures on which the growth rate is based. In 1991, the median price of a house in a Victorian small coastal community was $100,800 (in 2001 dollars), whereas in WA small coastal areas, the comparable figure was $74,340. By 2001, however, the median price in Victoria had risen only to $125,000 against an enormous growth in WA where prices rose to $140,000.

Figure 4.1: Median house price change (per cent), 1991-2001 by settlement type
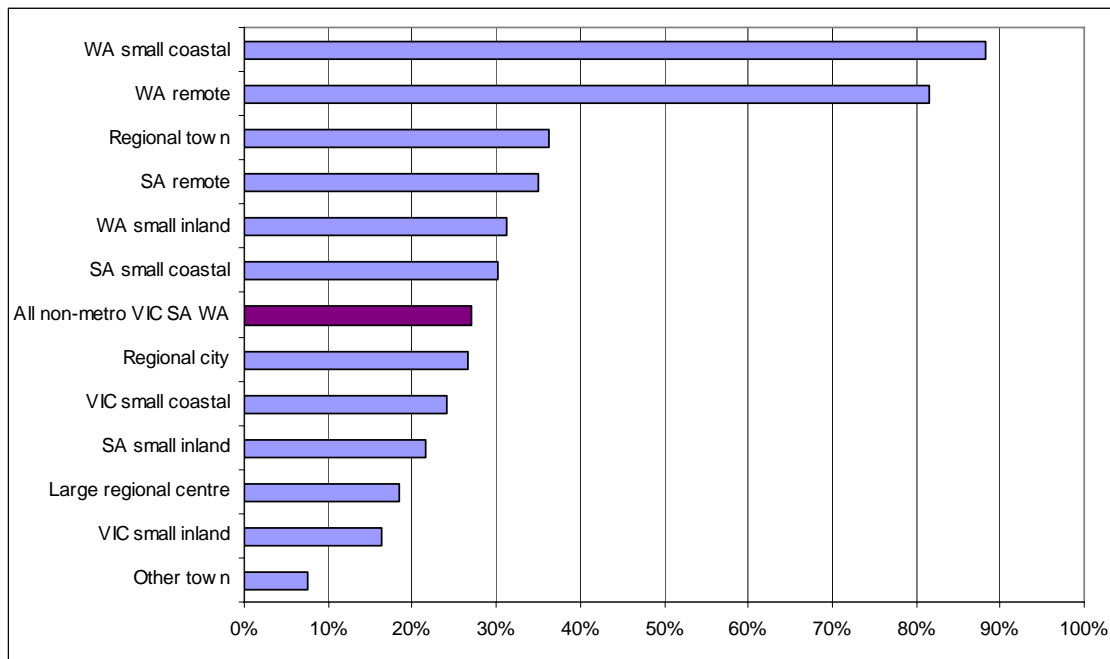
Source: 'Three State Property Settlement' file, held by the School of Geography and Environmental Science, Monash University, derived from Vic, SA, WA Valuer General unit record property sales data 1991 and 2001.

Figure 4.2 shows the change in house prices over the decade for the 248 settlements in the analysis. With the exception of 42 settlements registering declines, most settlements experienced some degree of house price growth. Figure 4.2 highlights the range of price increases across the settlements.

Figure 4.2: Distribution of house price change between 1991 and 2001, non-metropolitan settlements in Victoria, South Australia, and Western Australia
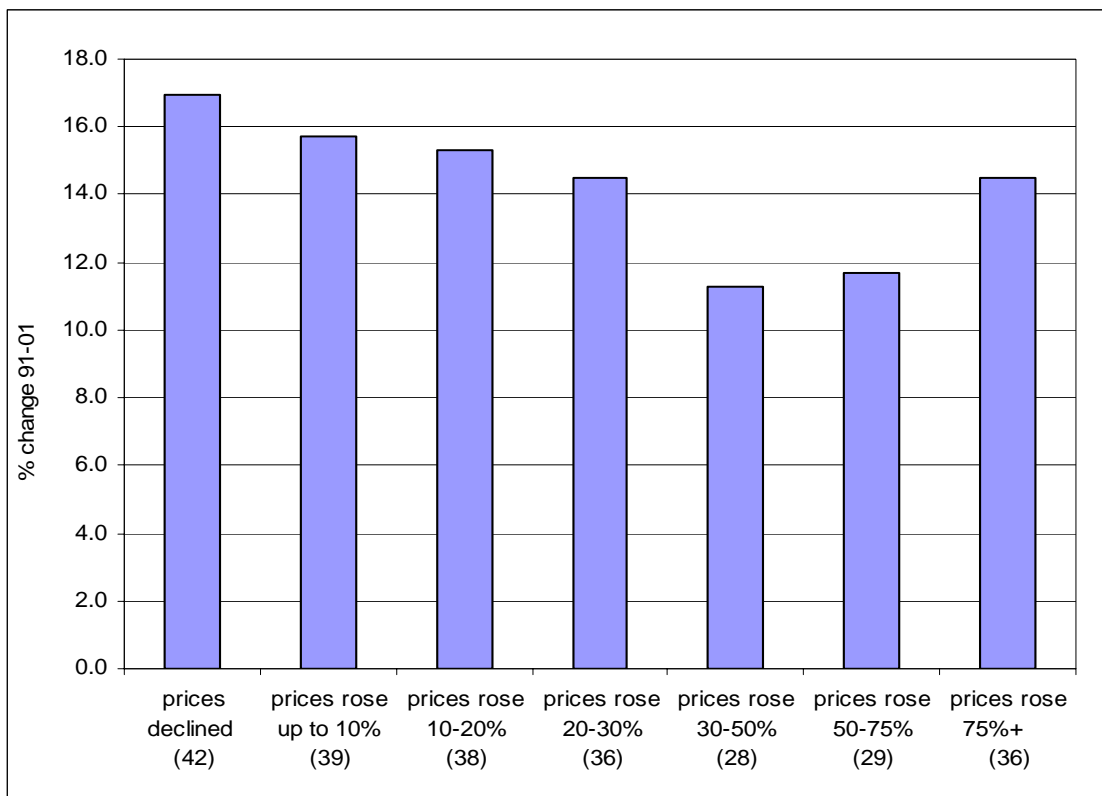
N=248; 29 cases excluded due to lack of house sales in 1991 or 2001. The number in brackets refers to the number of settlements in the category.

Source: 'Three State Property Settlement' file, held by the School of Geography and Environmental Science, Monash University, derived from Vic, SA, WA Valuer General unit record property sales data 1991 and 2001.

In order to illustrate the different supply and demand characteristics in declining and rising house price markets, as well as the range and potential application of data contained in the non-metropolitan database, Table 4.3 compares the high and low growth house price markets in the three states against a selection of key indicators that have been developed specifically to demonstrate the potential uses of a data file that incorporates both property record information and population and housing items.

Table 4.3 presents a range of indicators related to dwelling prices, population, income and rent assistance. These indicators were selected to demonstrate the complexity of supply and demand factors that contribute to housing market outcomes. As revealed in Table 4.3, the house prices in declining markets were relatively stronger in 1991 (with higher median prices) than settlements that experienced high gains during the decade. In 1991, the median sale price in markets experiencing decline over the subsequent decade was $78,750, more than one and a half times higher than the $47,880 recorded in markets that went on to experience significant increases. By 2001, the median house price in declining and rising markets respectively was $64,000 and $107,500.

Although the sales of flats and units had a lower level of activity, the results show a similar pattern. In 1991, close to half the non-metropolitan settlements in the three states did not record a single sale in this segment of the market. By 2001, the number of settlements with no flat or unit sales decreased. The relative scarcity of flats and units in non-metropolitan housing markets is reflected in the premium median prices. Flat and unit sales, on average, commanded higher prices than did house sales. In

44

rising markets, prices rose from $106,155 in 1991 to $124,950 in 2001 (both amounts in $2001).

Table 4.3: Selected characteristics comparing markets with declining house prices and those with gains of 50 per cent or more between 1991 and 2001

	House price decline 91-01	House price gain 50% or more 91-01	All other settlements	Total
No. of settlements	42	65	103	248
Dwelling prices and sales activity and rents				
% settlements with zero house sales 1991	0.0	0.0	15.9	9.7
% settlements with zero house sales 2001	2.4	0.0	12.9	8.3
Median house price 1991 (in $2001)	$78,750	$47,880	$78,120	$72,406
Median House Price 2001 (in $2001)	$64,000	$107,500	$90,000	$92,839
% settlements with zero flat sales 1991	47.6	53.8	45.3	47.7
% settlements with zero flat sales 2001	38.1	46.2	30.0	35.0
Median flat price 1991 (in $2001)*	$86,310	$106,155	$93,240	$93,305
Median flat price 2001(in $2001)*	$72,500	$124,950	$95,000	$98,366
Dwelling sales per 100 households 1991 (mean)	2.5	3.8	2.9	3.1
Dwelling sales per 100 households 2001 (mean)	4.3	4.5	4.7	4.6
% of area's private renter households paying low rent in 2001 (mean)	45.7	34.6	38.9	38.9
Population and households				
Population growth rate 1991-01 (mean)	-7.8	13.6	3.0	3.8
Household growth rate 1991-01 (mean)	-0.5	25.1	7.7	9.1
% 5year turnover rate 2001	39.1	44.5	39.5	40.6
Ageing index 199112	36.6	36.7	45.5	42.1
Ageing Index 2001	57.1	50.6	61.8	58.5
Income and employment				
Index growth low income households 1991-01 (mean)[13]	108.3	92.2	95.9	96.9
Indexed growth high income households 1991-01 (mean)[14]	98.3	108.5	107.1	106.1
Employment growth rate 1991-01 (mean)	-4.4	21.6	7.7	9.1
% growth in professionals, associate professionals and managers-administrations 1991-01 (mean)	6.6	30.9	15.9	18.0
Rent assistance and public housing				
Average annual growth in rent assistance recipients 1998-03 (mean)	5.0	6.1	3.4	4.3
Ratio RA recipients to public housing dwellings 2001	5.2	13.7	6.8	8.7

Source: 'Three State Property Settlement' file, held by the School of Geography and Environmental Science, Monash University, derived from Vic, SA, WA Valuer General unit record property sales data 1991 and 2001 and ABS Census of Population and Housing, 1991 and 2001.

---

[12] The ageing index is numbers of persons 65 years or older divided by number of children aged less than 15 years.

[13] Growth in numbers of low income households 1991-2001 relative to household growth rate

[14] Growth in numbers of high income households relative to household growth rate

The relative level of sales activity (as indicated by the measure showing 'dwelling sales per 100 households') suggests that while rising house price markets may have recorded lower median sale prices in 1991, they were already experiencing considerably more activity than in declining markets and other settlements. Rising markets registered 3.8 sales per 100 households in 1991 compared with only 2.5 in declining markets (and 3.1 on average for all settlements). In 2001, the level of sales activity across all settlements was more similar, approximately 4.6 sales per households across all settlements.

Table 4.3 contains one indicator of rent levels, showing the average percentage of the settlements' private renter households paying low rent. One of the greatest difficulties in constructing the database was trying to develop comparable categories for dwelling rent and household income (discussed below) over time. The approach taken was to consider the relative distribution of the rents (as nominal dollar categories differed) and to determine cut-off points containing a similar portion of rents in two different periods. The closest approximation of 'low rent' for non-metropolitan regions in 1991 and 2001 (excluding not stated and rent free) was the lowest 20 per cent of rents. The ABS Time Series data includes the same nominal range of rents for 1991, 1996 and 2001, but these categories were very dissimilar in real terms. For example, in 1991, 43 per cent of renter households came into the low nominal category (<$78 per week); but only 29 per cent in 1996 and 20 per cent in 2001. To overcome this problem, we used the 1991 ABS Basic Community Profile rent categories and concorded the 1991 Collector's Districts to the 2001 Statistical Local Areas. This was an extremely time-consuming process and still only produced the broadest of comparable categories over time.

The outcome suggests, however, that rents are closely aligned to sale price activity. In 2001, 45.7 per cent of the private renter households living within declining markets paid rents categorized as 'low'. This is a considerably higher share of private renter households paying low rents than noted for the rising markets (34 per cent) or all other settlements. It appears that low demand for home purchase may also operate to suppress the rent levels in different settlements.

The strong positive relationship between population change and housing market activity can be seen in the population indicators presented in Table 4.3. Declining markets experienced negative population and household growth during the decade, while rising markets had above average rates of population and household growth. Population turn-over in the five years (1996-2001) was higher in the rising markets than other settlements. Rising markets were also typified by younger populations as indicated in the ageing index. Both declining and rising markets had similar ageing index scores in 1991 (both were younger on average than 'all other' settlements). During the 1990s, declining and rising markets experienced different ageing trends – with greater ageing occurring in the declining markets. The high growth markets had the youngest population of all, as indicated in the 2001 ageing index score of 50.6.

Socio-economically, declining markets experienced a disproportionate growth in low income households and decline in high income households over the decade compared with all other settlements. Constructing comparable indicators of income over time proved a difficult task, as categories and dollar amounts differed considerably in different census years. In the end, 1991 and 2001 household income categories were drawn from the ABS Basic Community Profiles of each respective year and the 1991 Census Collection Districts (CDs) were concorded to 2001 Statistical Local Areas. The 1991 and 2001 household income distributions (excluding partial and not stated incomes) were matched as closely as possible (even though there were 18 income ranges in 1991 in annual dollars and 13 ranges in weekly dollars in 2001). The resulting distributions allowed for three broadly similar categories – the lowest 30 per cent of household incomes; the middle 30 per cent; and the top 40 per cent of household incomes). The indicators provided in Table 4.3

refer to the lowest 30 per cent of income and the top 40 per cent of incomes in each of the census years.

Clearly the socio-economic dynamics over the period differed substantially in the declining market settlements from all other settlements. Employment fell during the decade in declining markets and grew more than twice the average for all settlements in the rising markets. Alongside the change in employment levels, the occupation structure differed. In declining markets, growth in professional workers was only a third of the rate recorded for all settlements, while rising markets saw a disproportionately high growth in professions (30.9 per cent). In rising markets, the numbers of low income households grew significantly slower than expected, while higher income households grew faster.

The final two indicators relate to rent assistance and public housing. The numbers of rent assistance recipients per statistical local area were available from the IRDB for the years 1998 to 2003. These figures were compiled for the settlements used in this data base and an annual average growth rate was computed. The second indicator used simply relates the number of rent assistance recipients in 2001 to the number of public dwellings. A few observations can be made. First, the annual average growth in rent assistance recipients over the years 1998-2003 was higher in both declining and rising markets than in all other settlements. Rising markets, in fact, had the highest increase of all. Second, the ratio of rent assistance recipients to public dwellings is highest for the rising market areas and lower in the declining markets. This suggests that i) public housing may be more available in declining market areas; ii) that rent assistance fills a gap in rising market areas for those unable to purchase the increasingly expensive stock.

The addition of property record information provides an extremely valuable addition to the non-metropolitan database. Ideally, a national database would encompass records for all states and territories. The findings based on three states suggest that, in general, non-metropolitan market prices grew by 27 per cent over the decade 1991-2001. The performance of Western Australian small coastal and remote markets stands out in the dramatically high increases in prices. Declining markets, though accounting for only about 17 per cent of the settlements, showed clear pictures of decline in population and labour force activity. Sales activity had already slowed relative to other settlements in 1991. An intriguing result is the relationship between the number of rent assistance recipients in a settlement type and house price performance. Rising markets displayed higher average annual growth in rent assistance recipients and more rent assistance recipient per public units than found in declining markets. This suggests that 'need' for housing assistance is not directly related to the level of house price growth. A focus only on declining markets would obscure the need that is evidently present in rising markets.

5 INTERNAL-MIGRATION AND JOURNEY-TO-WORK DATA AND HOUSING MARKETS

5.1 Introduction

This section illustrates the potential for internal-migration data and journey-to-work data for the analysis of housing market change in non-metropolitan Australia. An account of the intricacies and problems or difficulties associated with use of these data types is also presented.

The discussion is approached by first identifying links between the pattern of residential movement of the incumbent 1996 population from one settlement type to another and the pattern of journey-to-work movements within and between settlement types. The expectation is that patterns of residential movement and journey-to-work movement are interactive. In some cases the development of new or the expansion of existing residential settlements may stimulate job creation, which in turn may lead to further residential development. In other cases, job creation in an area may stimulate greater residential development. The subsequent focus will be to demonstrate the relevance of internal migration and journey-to-work data for housing market analysis by selecting a limited number of specific locations for further discussion.

5.2 Internal migration data

Customised internal-migration data sets from the 2001 Census were specified and purchased from the Australian Bureau of Statistics. Data was purchased for Victoria and New South Wales (NSW). The purchase of this data for additional states would have been cost prohibitive.

Further, the customised spatial units used in specifying the internal-migration data differed from the settlement types used in the master data set. Collapsing the full set of settlement areas used elsewhere in the project into a lesser number of areas made it affordable to include a number of housing and social variables in the internal-migration data set. The internal-migration data purchased for this project included the following variables:

→ Usual residence 1996

→ Usual residence 2001

→ Housing tenure

→ Housing type

→ Household type

→ Household income

→ Reference Person 1

These additional variables made it possible to compare patterns of internal migration for different social groups, including different household/family and tenure types.

The aggregation of spatial units for the internal-migration data took the settlement types identified in the master data set into account. Where possible, settlements of the same or similar type were aggregated. In this way the initial rationale used to classify areas was largely preserved. It should be remembered also that the spatial units of the same type produced in this way are not always contiguous with one another.

Figure 5.1: New South Wales internal migration areas
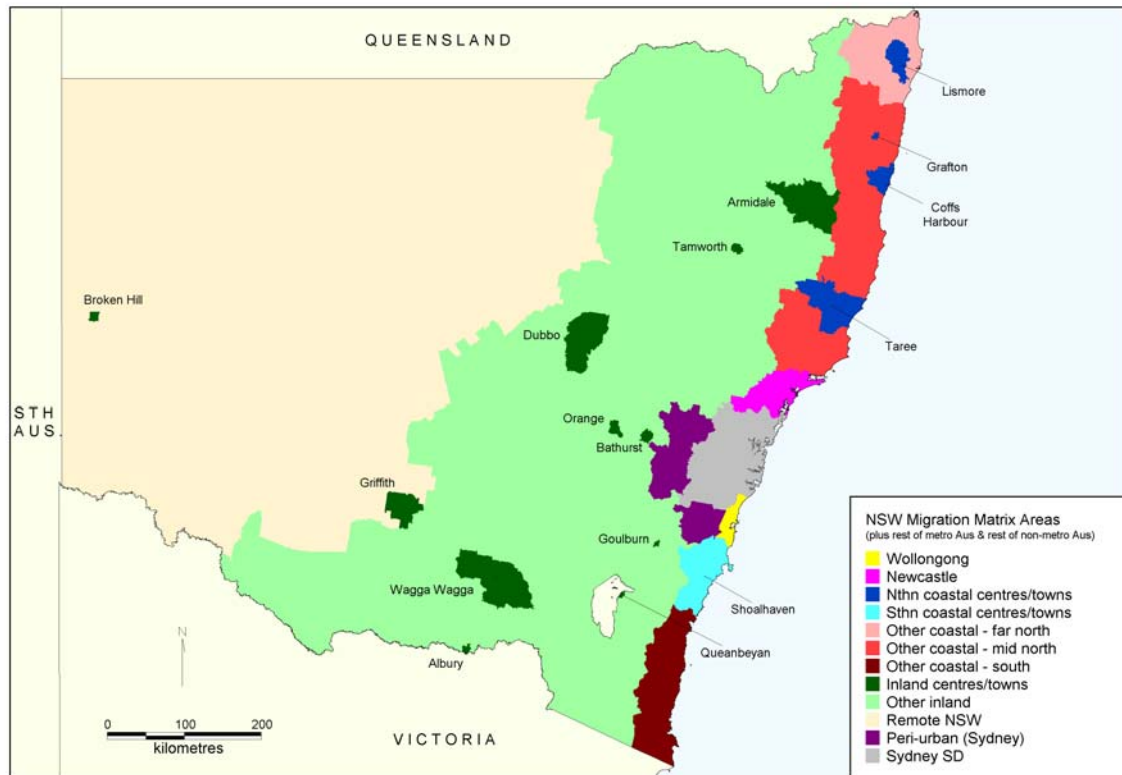
Source: Areas specified by the authors, digital boundaries derived from ABS Census of Population and Housing data

The data facilitate an examination of internal-migration patterns between different settlement types within NSW, not between or within settlements of the same type. Further, the data identify the numbers of persons moving into or out of a settlement type, and the net gain or loss of persons from a settlement type. Internal migration data for NSW is used to demonstrate its analytical potential for the study of housing markets. The spatial units defined for the NSW internal-migration data set are shown in figure 5.1.

The analysis of internal-migration from Australian Census data is made possible by the inclusion of questions which request information about the usual residential address of respondents one and five years prior to the Census. The present study uses the information concerning usual residential address five years ago. This question makes it possible to identify whether any respondent to the 2001 Census did or did not change residential address between the 1996 and 2001 Censuses. It is similarly possible to identify persons who changed residential address, but who did not move outside their 1996 Statistical Local Area or other designated spatial unit, such as the customised settlement types used in this study.

In addition, internal-migration data can be specified on purchase to identify the first reference person within a household. This means that, in cases where there is more than one family living in a dwelling, data can be selected to relate to the first family only. More importantly, the ability to select for household reference person provides a basis for a count of households rather than persons.

Table 5.1 shows the cross-tabulation of residential location in 1996 by residential location in 2001 for primary reference persons. The diagonal line of bold figures in the table shows the count of primary reference persons for each settlement type who either did not change residence in the inter-censal period or who changed residence within the same settlement type.

49

Table 5.1: New South Wales, residential location in 1996 and 2001 of 2001 Census respondents, customised settlement types

Usual Residence 1996 *	Usual Residence 2001														Total
	Wollongong	Newcastle	Northern Coastal	Southern Coastal	Other Coastal - Far North	Other Coastal - Mid North	Other Coastal - South	Inland Towns	Other Inland	NSW Remote	Peri-urban - Sydney	Sydney	Rest of Metro Australia	Rest of Non Metro Australia	
Wollongong	**79,192**	231	174	609	269	247	203	391	561	46	260	3,438	1,431	1,220	**88,272**
Newcastle	216	**150,656**	596	81	368	1,510	62	685	1,486	147	80	5,443	2,697	2,357	**166,384**
Northern Coastal	150	830	**46,224**	66	1,530	1,648	44	436	609	70	30	2,300	2,392	2,039	**58,368**
Southern Coastal	551	116	57	**23,552**	103	145	135	176	226	9	79	1,093	615	616	**27,473**
Other Coastal - Far North	72	284	1,152	42	**47,896**	395	36	189	348	47	30	1,439	2,586	3,433	**57,949**
Other Coastal - Mid North	130	1,603	1,889	102	494	**56,520**	81	550	819	41	55	3,014	1,620	1,816	**68,734**
Other Coastal - South	230	91	69	179	61	96	**17,867**	298	310	9	24	606	1,056	723	**21,619**
Inland Towns	514	1,200	665	337	453	925	406	**99,726**	4,717	401	267	4,867	6,105	4,323	**124,906**
Other Inland	663	2,354	1,018	548	711	1,340	659	7,385	**143,906**	573	392	5,770	5,379	5,878	**176,576**
NSW Remote	66	141	90	15	103	204	45	922	837	**13,892**	30	545	475	1,235	**18,600**
Peri-urban - Sydney	292	169	87	155	49	139	69	372	422	15	**17,515**	1,398	441	439	**21,562**
Sydney	5,306	8,946	3,560	3,906	3,688	6,890	1,505	4,711	6,478	376	3,206	**1,191,633**	29,106	17,024	**1,286,335**
Rest of Metro Aust	899	2,205	1,258	698	2,643	1,195	1,390	4,077	4,000	293	228	26,006	**2,556,328**	117,471	**2,718,691**
Rest of Non Metro Aust	747	1,767	1,245	474	3,056	1,375	668	3,323	4,275	852	230	9,759	131,659	**1,374,187**	**1,533,617**
Overseas 5 yrs ago	1,793	1,886	527	280	1,027	502	168	1,411	1,155	132	250	77,848	110,959	28,005	**225,943**
Total	**90,821**	**172,479**	**58,611**	**31,044**	**62,451**	**73,131**	**23,338**	**124,652**	**170,149**	**16,903**	**22,676**	**1,335,159**	**2,852,849**	**1,560,766**	**6,595,029**

Source: New South Wales Special Request Internal Migration matrix held by School of Geography and Environmental Science, derived from 1996 and 2001 ABS Census of Population and Housing data

* Data in table does not include cases where usual residence in 1996 was undefined or where there was no usual address; Migratory and offshore also not included

Table 5.1 indicates, for instance, that amongst 2001 Census respondents, there were 88,272 household primary reference persons who were living in Wollongong in 1996. Of these, 79,192 had not moved residence from Wollongong by 2001. This means that 9,080 primary reference persons did move out of Wollongong in the intercensal period. The locations of resettlement of these 9,080 persons are shown in the first row of the table. For example, 231 had moved to Newcastle.

In addition, the table shows that, at the 2001 Census, there were 90,821 primary reference persons living in Wollongong. Of these, 79,192 were living in Wollongong in 1996 (as noted above). The difference between these two figures, 11,629 moved into Wollongong from elsewhere. For instance, 216 moved into Wollongong from Newcastle and 1,793 who were overseas at the time of the 1996 Census.

From the information in Table 5.1, the net gain or loss of population, as a proportion of the 1996 population, can be calculated for each settlement type.

As shown in Table 5.2, this calculation can first be made excluding primary reference persons in 2001 who arrived from overseas during that period. This provides a picture of the outcome of residential relocation decisions of the 1996 population. A subsequent calculation can be made to include the population 'inflow' of persons born between 1996 and 2001 and persons who arrived from overseas.

Table 5.2: Internal migration, resident net gain/loss as per cent of 1996 population (primary reference persons only)

	1996 population	Continuing resident population	Inflow 96-01	Outflow 96-01	Net gain/loss 96-01	2001 pop. (not inc. 0-4 & os 1996)	Net gain/loss as % 96	Overseas arrivals 96-01	Net gain/loss 96-01 plus overseas arrivals	2001 population (inc. os 1996)	Overall net gain loss as % 96
Wollongong	88,272	79,192	11,796	9,080	2,716	90,988	3.1	1,793	4,509	92,781	5.1
Newcastle	166,384	150,656	23,879	15,728	8,151	174,535	4.9	1,886	10,037	176,421	6.0
Northern Coastal	58,368	46,224	7,746	12,144	-4,398	59,610	-7.5	527	-3,871	60,137	-6.6
Southern Coastal	27,473	23,552	7,993	3,921	4,072	31,545	14.8	280	4,352	31,825	15.8
Other Coastal - Far North	57,949	47,896	15,308	10,053	5,255	63,204	9.1	1,027	6,282	64,231	10.8
Other Coastal - Mid North	68,734	56,520	17,842	12,214	5,628	74,362	8.2	502	6,130	74,864	8.9
Other Coastal - South	21,619	17,867	5,847	3,752	2,095	23,714	9.7	168	2,263	23,882	10.5
Inland Towns	124,906	99,726	26,496	25,180	1,316	126,222	1.1	1,411	2,727	127,633	2.2
Other Inland	176,576	143,906	29,088	32,670	-3,582	172,994	-2.0	1,155	-2,427	174,149	-1.4
NSW Remote	18,600	13,892	3,359	4,708	-1,349	17,251	-7.3	132	-1,217	17,383	-6.5
Peri-urban - Sydney	21,562	17,515	5,337	4,047	1,290	22,852	6.0	250	1,540	23,102	7.1
Sydney	1,286,335	1,082,191	206,123	204,144	1,979	1,288,314	0.2	77,848	79,827	1,366,162	6.2
Rest of Metro Aust	2,718,691	2,556,328	245,248	162,363	82,885	2,801,576	3.0	110,959	193,844	2,912,535	7.1
Rest of Non Metro Aust	1,533,617	1,374,187	197,409	159,430	37,979	1,571,596	2.5	28,005	65,984	1,599,601	4.3

Source: New South Wales Special Request Internal Migration matrix held by School of Geography and Environmental Science, derived from 1996 and 2001 ABS Census of Population and Housing data

5.2.1 Strengths and weaknesses of internal-migration data

The usefulness of this internal-migration data, however, must be balanced against its limitations. The data only relate to respondents as of Census night 2001. This means that it does not include persons who were in Australia at the time of the 1996 Census, but who either died or left the country by 2001. It also does not include persons who were born in the 1996-2001 intercensal period; it therefore only deals with a population of persons older than 5 years.

Possibly, the most serious limitation is that the socio-economic and housing data used in association with movement data tells us about respondents' circumstances at the time of the 2001 Census, not five years earlier. If, for example, an attempt is made to identify the residential movement of low-income persons, then the income data only indicate that a person had low-income at Census time in 2001. It can only be tentatively inferred that they might also have been low-income in 1996. Little, if anything, can be gleaned with certainty about persons' changes of fortune between censuses.

Nevertheless, assuming that the fortunes of most persons within the population are not dramatically altered or reversed between censuses, the assumption of a high level of socio-economic continuity may seem reasonable.

The data thus obtained is received in a form which allows its importation into standard statistical manipulation software, in this case SPSS (Statistical Package for Social Sciences). In this form, the residential movement or stability of population sub-groups can be distinguished. This may be according to income category, family type, age or some other variable. For instance, an understanding might be gained as to the residential concentration or dispersal of low or high income persons, single parent families or the aged. Further, combinations of such characteristics can be used to define sub-populations and their residential movement analysed. For instance, the residential movement patterns of aged low-income persons might be identified.

5.3 Journey-to-work data

Analysis of journey-to-work (JTW) data indicates respondents' movement from one place to another – from home to work. Similarly to internal-migration data, data relating to home-work movements can be potentially linked to additional data which describes labour market, housing, age, sex, income, family type or any other personal or family information recorded on the census form.

Again, this data can be purchased in a form amenable to importation into data manipulation software, which allows the selection of population sub-groups for analysis.

This data relates to employed persons only and was limited to persons older than 15 years, to eliminate students involved in part-time work. In cases where employees have more than one job, the data may be limited to travel information relating to the principal job only.

As with internal-migration data, customised spatial units can be specified. However, as stated in the research proposal, the JTW data for this project was brought from the Australian Bureau of Statistics in standard form, with Statistical Local Area as the spatial unit used for the data. Difficulty was encountered because of this. Purchasing the data in standard form meant that SLA level data needed to be aggregated into the customised settlement areas used for the analysis. This required an extensive and time-consuming summing of rows and columns in the data output. This needed to be done on a state-by-state basis. Particular problems were presented in the aggregation process for the Queensland data, as the number of Queensland SLAs far exceeded the number of columns available in Microsoft Excel - 256. Queensland data therefore had to be divided into three component parts and aggregated separately. If the data

had been purchased from the ABS on the basis of the relatively few customised settlement types in the first instance, these difficulties would have been avoided.

Table 5.3 below shows a cross-tabulation of place of residence by place of work for employed persons older than 15 years in NSW for the customised settlement types defined for the project. The layout and basic logic of the table is similar to that used for internal-migration data discussed above.

The row totals represent the numbers of employed persons (> 15 years) who reside in each of the settlements listed. Column totals show the numbers of persons who are employed in each settlement. The figures which are highlighted on the diagonal indicate the number of persons in each settlement who both live and work within each respective area.

5.3.1 Self-containment

Two important measures that can be derived from journey-to-work data relate to the idea of 'self-containment'. One self-containment measure is the proportion of an area's residential population which also works in that same area. The second measure is the proportion of jobs in an area that is filled by local residents. For instance, areas that are job rich, in having many more jobs than residents, may have a high self-containment rate on the first measure, but a low rate on the second. This is because most residents can find work locally, while many outside workers are required to travel into the area to fill the remaining jobs. There can be a high level of spatial dissociation between these two self-containment measures.

Each of these measures is easily derived from the journey-to-work travel counts shown in Table 5.3 below. If the figures in each cell are calculated as percentages of the total in rows and columns respectively, as shown in Tables 5.4 and 5.5 below, then it can be seen how each number found on the diagonal in Table 5.3 can be expressed as either of two percentages. As explained, each of these percentage figures is a different measure of labour market self-containment. The percentages shown in Table 5.4 represent the proportion of persons who reside in an area who also work in that area. By contrast, the percentages on the diagonal in Table 5.5 express the proportion of jobs performed in an area which are filled by residents of that area.

As noted, these respective proportions can be quite different depending upon the ratio of residents to available jobs in an area. For example, although 91 per cent of employed persons (>15 years) in Goulburn reside in Goulburn (See Table 5.4), only 77 per cent of the jobs in Goulburn are filled by Goulburn residents (See Table 5.5). This is because there are considerably more jobs than employed residents in Goulburn. Approximately 20 per cent of the jobs being filled in Goulburn were filled by persons residing in small inland areas.

Table 5.3: Journey-to-work movements NSW - employed persons 15 plus years, 2001 Census

RESIDENTIAL LOCATION	Settlement name	Newcastle	Wollongong	Shoalhaven	Coffs Harbour	Wagga Wagga	Lismore	Greater Taree	Tamworth	Armidale	Dubbo	Bathurst	Orange	Queanbeyan	Goulburn	Griffith	Albury	Broken Hill	Grafton	Greater Lithgow	NSW small inland	NSW small coastal	NSW med coastal	NSW large coastal	NSW remote	Sydney metro	Mig'y & offsh/ LH Is/ works else-where etc.	Total
Newcastle	Reg'l city	156255	49	31	19	36	16	71	44	25	19	14	22	3	9	16	6	0	3	23	4037	428	34	364	167	7831	1676	171198
Wollongong	Reg'l city	54	77129	928	14	14	3	3	10	20	9	9	26	5	15	3	6	3	0	3	315	47	9	524	52	15914	1122	96237
Shoalhaven	Lge Reg'l centre	15	839	22847	0	29	0	0	4	0	3	0	3	7	10	0	0	0	0	0	162	16	3	239	11	804	482	25474
Coffs Harbour	Lge Reg'l centre	29	7	6	18717	3	8	3	5	10	4	0	3	0	0	0	3	0	202	0	117	549	26	21	12	181	188	20094
Wagga Wagga	Lge Reg'l centre	6	3	3	0	21834	0	3	3	6	10	3	16	7	4	14	37	3	0	0	998	119	0	15	28	117	237	23466
Lismore	Reg'l town	6	0	0	12	0	12314	3	0	3	6	0	3	0	0	6	0	0	6	3	83	683	367	1081	6	83	189	14854
Greater Taree	Reg'l town	80	3	17	14	0	3	11798	3	18	0	5	3	0	0	0	0	0	0	0	122	81	86	807	7	156	117	13320
Tamworth	Reg'l town	47	3	3	5	0	0	0	12874	36	3	4	3	3	0	6	0	0	4	0	511	13	3	10	7	87	106	13728
Armidale	Reg'l town	17	3	0	7	3	3	3	58	8612	6	0	0	0	0	0	3	0	4	0	331	14	14	8	6	96	79	9267
Dubbo	Reg'l town	18	11	0	3	21	0	3	5	0	14744	13	21	0	0	0	0	4	0	3	407	7	3	3	60	118	144	15588
Bathurst	Reg'l town	7	3	0	0	0	0	0	0	0	14	10762	252	0	0	0	3	0	0	210	484	0	3	3	3	188	84	12016
Orange	Reg'l town	9	4	0	3	4	0	3	3	0	21	212	13175	3	3	3	0	0	0	8	703	17	3	0	59	122	82	14437
Queanbeyan	Reg'l town	15	0	0	0	3	0	0	0	0	3	3	3	4697	9	0	0	0	0	0	133	3	3	4	3	66	9232	14177
Goulburn	Reg'l town	6	10	0	0	8	3	0	0	0	3	0	0	28	7160	0	3	0	0	0	344	0	0	66	9	99	163	7902
Griffith	Reg'l town	7	0	0	0	10	0	0	3	0	0	0	0	0	0	9749	3	0	0	0	174	11	3	7	79	20	90	10156
Albury	Reg'l town	0	8	0	0	42	0	3	3	0	0	3	0	3	0	0	13118	0	0	0	629	10	5	0	6	32	3277	17139
Broken Hill	Reg'l town	0	0	0	0	3	0	3	0	3	3	0	3	0	0	3	0	6058	0	0	21	3	3	0	86	29	142	6360
Grafton	Other town	3	0	0	55	0	13	0	0	0	0	0	0	0	3	0	0	0	4879	0	65	341	3	7	0	36	62	5467
Greater ...	Other town	10	4	0	0	0	0	5	0	3	4	264	13	0	0	0	0	0	0	5585	216	0	0	7	0	706	83	6900
NSW small inland	NSW small inland	1231	75	44	45	1437	13	25	4155	1454	1255	1913	2561	801	1837	534	1758	6	12	140	157490	248	70	361	868	2156	11699	192188
NSW small coastal	NSW small coastal	1073	6	9	1281	6	1280	44	7	18	6	0	6	0	3	0	0	0	2923	4	451	22398	225	421	36	404	469	31070
NSW med coastal	NSW med coastal	35	3	16	25	6	780	106	10	7	0	0	3	0	0	3	3	0	8	0	158	187	24994	5087	27	380	1359	33197
NSW large coastal	NSW large coastal	588	473	123	16	26	2716	656	7	25	5	9	36	19	132	11	7	0	16	6	619	434	2695	63837	61	3372	5374	81263
NSW remote	NSW remote	6	6	0	3	14	0	3	6	9	54	7	4	6	0	139	3	250	0	4	515	18	12	23	16814	122	1321	19339
Sydney metro	Sydney metro	3619	2216	347	119	264	109	184	116	223	128	167	106	27	109	169	88	27	27	472	5669	2092	276	1497	501	1632189	20196	1670937
Migratory - offshore'Lord Howe Island	Migratory - offshore'Lord Howe Island	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	455	466
Total		163,136	80,855	24,374	20,338	23,763	17,261	12,919	17,316	10,472	16,300	13,388	16,262	5,609	9,294	10,656	15,041	6,351	8,084	6,461	174,754	27,719	28,840	74,392	18,908	1,665,319	58,428	2,526,240

Source: Journey to Work matrix 2001 held by the School of Geography and Environmental Science, Monash University derived from 2001 ABS Census of Population and Housing data

Table 5.4: Self containment rates, NSW - employed persons 15 plus years, (proportion of employed persons who reside and work in same settlement), 2001 Census

RESIDENTIAL LOCATION	Wollongong	Shoalhaven	Coffs Harbour	Wagga Wagga	Lismore	Greater Taree	Tamworth	Armidale	Dubbo	Bathurst	Orange	Queanbeyan	Goulburn	Griffith	Albury	Broken Hill	Grafton	Greater Lithgow	NSW small inland	NSW small coastal	NSW med coastal	NSW large coastal	NSW remote	Sydney metro	Mig'y & offsh/ LH Is/ works else-where etc	Total
Newcastle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	5	1	100
Wollongong	80	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	17	1	100
Shoalhaven	3	90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	3	2	100
Coffs Harbour	0	0	93	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	3	0	0	0	1	1	100
Wagga Wagga	0	0	0	93	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	0	0	0	0	1	100
Lismore	0	0	0	0	83	0	0	0	0	0	0	0	0	0	0	0	0	0	1	5	2	7	0	1	1	100
Greater Taree	0	0	0	0	0	89	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	6	0	1	1	100
Tamworth	0	0	0	0	0	0	94	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	1	100
Armidale	0	0	0	0	0	0	1	93	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	1	1	100
Dubbo	0	0	0	0	0	0	0	0	95	0	0	0	0	0	0	0	0	0	3	0	0	0	0	1	1	100
Bathurst	0	0	0	0	0	0	0	0	0	90	2	0	0	0	0	0	0	2	4	0	0	0	0	2	1	100
Orange	0	0	0	0	0	0	0	0	0	1	91	0	0	0	0	0	0	0	5	0	0	0	0	1	1	100
Queanbeyan	0	0	0	0	0	0	0	0	0	0	0	33	0	0	0	0	0	0	1	0	0	0	0	0	65	100
Goulburn	0	0	0	0	0	0	0	0	0	0	0	0	91	0	0	0	0	0	4	0	0	1	0	1	2	100
Griffith	0	0	0	0	0	0	0	0	0	0	0	0	0	96	0	0	0	0	2	0	0	0	1	0	1	100
Albury	0	0	0	0	0	0	0	0	0	0	0	0	0	0	77	0	0	0	4	0	0	0	0	0	19	100
Broken Hill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	95	0	0	0	0	0	0	1	0	2	100
Grafton	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	89	0	1	6	0	0	0	1	1	100
Greater Lithgow	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	81	3	0	0	0	0	10	1	100
NSW small inland	0	0	0	1	0	0	2	1	1	1	1	0	1	0	1	0	0	0	82	0	0	0	0	1	6	100
NSW small coastal	0	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	9	0	1	72	1	1	0	1	2	100
NSW med coastal	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	75	15	0	1	4	100
NSW large coastal	1	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	3	79	0	4	7	100
NSW remote	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	3	0	0	0	87	1	7	100
Sydney metro	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	98	1	100
Mig'y & offsh/LH Is/ works elsewhere etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	98	100

Source: Journey to Work matrix 2001 held by the School of Geography and Environmental Science, Monash University, derived from ABS 2001 Census of Population and Housing data

Table 5.5: Self containment rates, NSW - employed persons 15 plus years, (proportion of jobs filled by local residents), 2001 Census

RESIDENTIAL LOCATION	\ WORK LOCATION																									
	Newcastle	Wollongong	Shoalhaven	Coffs Harbour	Wagga Wagga	Lismore	Greater Taree	Tamworth	Armidale	Dubbo	Bathurst	Orange	Queanbeyan	Goulburn	Griffith	Albury	Broken Hill	Grafton	Greater Lithgow	NSW small inland	NSW small coastal	NSW med coastal	NSW large coastal	NSW remote	Sydney metro	Mig'y & offsh/ LH Is/ works else etc
Newcastle	**96**	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	1	0	3
Wollongong	0	**95**	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Shoalhaven	0	1	**94**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Coffs Harbour	0	0	0	**92**	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0
Wagga Wagga	0	0	0	0	**92**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Lismore	0	0	0	0	0	**71**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	0	0	0
Greater Taree	0	0	0	0	0	0	**91**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0
Tamworth	0	0	0	0	0	0	0	**74**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Armidale	0	0	0	0	0	0	0	0	**82**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dubbo	0	0	0	0	0	0	0	0	0	**90**	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bathurst	0	0	0	0	0	0	0	0	0	0	**80**	2	0	0	0	0	0	3	0	0	0	0	0	0	0	0
Orange	0	0	0	0	0	0	0	0	0	0	2	**81**	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Queanbeyan	0	0	0	0	0	0	0	0	0	0	0	0	**84**	0	0	0	0	0	0	0	0	0	0	0	0	16
Goulburn	0	0	0	0	0	0	0	0	0	0	0	0	0	**77**	0	0	0	0	0	0	0	0	0	0	0	0
Griffith	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**91**	0	0	0	0	0	0	0	0	0	0	0
Albury	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**87**	0	0	0	0	0	0	0	0	0	6
Broken Hill	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**95**	0	0	0	0	0	0	0	0	0
Grafton	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**60**	0	0	1	0	0	0	0	0
Greater Lithgow	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	**86**	0	0	0	0	0	0	0
NSW small inland	1	0	0	0	6	0	0	24	14	8	14	16	14	20	5	12	0	0	2	**90**	1	0	0	5	0	20
NSW small coastal	1	0	0	6	0	7	0	0	0	0	0	0	0	0	0	0	0	36	0	0	**81**	1	1	0	0	1
NSW med coastal	0	0	0	0	0	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	**87**	7	0	0	2
NSW large coastal	0	1	1	0	0	16	5	0	0	0	0	0	0	1	0	0	0	0	0	0	2	9	**86**	0	0	9
NSW remote	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	4	0	0	0	0	0	0	**89**	0	2
Sydney metro	2	3	1	1	1	1	1	1	2	1	1	1	0	1	2	1	0	0	7	3	8	1	2	3	**98**	35
Mig'y & offsh/LH Is/ works else. etc	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**
Total	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

Source: Journey to Work matrix 2001 held by the School of Geography and Environmental Science, Monash University, derived from ABS 2001 Census of Population and Housing data

5.4 Using internal-migration data for housing market analysis - NSW

Focusing on selected settlements in NSW, this section demonstrates how internal-migration and journey-to-work data can be useful for the analysis of housing markets.

As described above, information about persons' residential movement between Censuses can be used to calculate the net gain or loss of population for particular settlements or settlement types for the 1996-2001 inter-censal period. Further, data relating to net population gains and losses can be disaggregated on the basis of demographic and social variables to reveal structural differences in the population movements to and from particular locations.

5.4.1 Net gain/loss by age group

As an example, Table 5.6 below shows the net gains and losses of reference persons (household heads) by age group.

Table 5.6: Internal migration NSW: net gain/loss as percentage 1996 population (ref. persons) by age

Region	15-29 yrs	30-44 yrs	45-64 yrs	65 yrs plus	All ref. persons
Wollongong	3.0	**3.4**	2.1	**4.2**	3.1
Newcastle	2.6	**5.5**	4.4	**6.0**	4.9
Northern Coastal	-40.6	-9.0	**-0.9**	**3.0**	-7.5
Southern Coastal	3.0	**16.8**	**20.8**	10.5	14.8
Other Coastal - Far North	-13.9	**13.3**	**11.3**	**11.0**	9.1
Other Coastal - Mid North	-20.6	**11.5**	**13.9**	**8.5**	8.2
Other Coastal - South	-14.9	**11.7**	**17.9**	6.6	9.7
Inland Towns	0.3	0.3	-0.6	**5.5**	1.1
Other Inland	-18.1	**0.0**	**0.1**	**1.1**	-2.0
NSW Remote	-7.8	-11.6	**-5.4**	**-2.6**	-7.3
Peri-urban (Sydney)	-16.2	**9.6**	**8.8**	**8.5**	6.0
Rest of Non Metro Australia	-4.6	**2.8**	**3.7**	**4.6**	2.5
Total	4.0	2.2	1.3	2.9	2.3

Source: New South Wales Special Request Internal Migration matrix held by School of Geography and Environmental Science, derived from 1996 and 2001 ABS Census of Population and Housing data

Disaggregation of residential movement by age corroborates previous research which shows a net loss of younger persons from many non-metropolitan locations. These losses are associated with significant net gains of younger persons to metropolitan areas. An examination of the movement of reference persons, rather than all persons, provides an approximation of the number of households that were either involved in internal population movements or formed as a result of individuals' residential movements, as well as some insight into the age of household members.

In contrast with the movement of younger persons, there were particularly strong net gains of persons in the 30 to 44 years and 45 to 64 years age groups in NSW coastal areas (with the exception of the 'Northern coastal' region). The data suggest that pre-retirement persons aged 45 to 64 years are relatively mobile compared with persons who are older than 64 years, as the net gains of the older age group in these coastal areas was markedly lower than for the former age group.

Peri-urban Sydney also stands out as an area characterised by a net loss of younger persons and net gains of persons in the 30 to 44, 45 to 64 and 65 plus years age groups.

Again, the 'northern coastal' region, which covers Lismore, Coffs harbour, Greater Taree and Grafton, is also notable in having a dramatic net loss of persons aged 15 to 29 years (-41 per cent) a relatively small net loss of persons aged 45 to 64 years (-1 per cent) and a relatively high net gain of persons older than 65 years (3 per cent, against an overall loss of -8 per cent).

A cross-tabulation of the residential location of reference persons in 1996 and in 2001 can be used to ascertain the residential origin of in-movers. Table 5.7 uses the southern Coastal region as a example. This region includes Shoalhaven. Table 5.7 indicates that a relatively high proportion of the 2001 residents (household reference persons) of the southern Coastal region were persons aged 30-44 years and 45-64 years who were living in Sydney or other Australian metropolitan areas in 1996. Wollongong and NSW inland areas were also significant sources of the residential in-movement to the Southern Coastal area between 1996 and 2001. Predictably, the table also shows that the great majority of persons who were living in this region in 2001 had been living there five years previous.

Table 5.7: 1996 residential location of people who were residents of Southern Coastal region (NSW) in 2001: household reference persons only

	Age (yrs)							
	No.				Per cent			
	15-29	30-44	45-64	65 +	15-29	30-44	45-64	65 +
Wollongong	111	186	215	97	4.4	2.3	2.0	1.0
Newcastle	21	18	24	18	0.8	0.2	0.2	0.2
Northern Coastal	3	21	23	19	0.1	0.3	0.2	0.2
Southern Coastal	**1,522**	**5,822**	**8,252**	**7,956**	60.8	72.6	75.7	85.2
Other Coastal - Far North	3	9	9	21	0.1	0.1	0.1	0.2
Other Coastal - Mid North	12	29	28	33	0.5	0.4	0.3	0.4
Other Coastal - South	33	62	54	30	1.3	0.8	0.5	0.3
Inland Towns	88	108	93	48	3.5	1.3	0.9	0.5
Other Inland	55	214	204	75	2.2	2.7	1.9	0.8
NSW Remote	6	6	3	0	0.2	0.1	0.0	0.0
Peri-urban - Sydney	21	35	56	43	0.8	0.4	0.5	0.5
Sydney	393	1039	1623	851	12.8	11.1	12.7	8.1
Rest of Metro Australia	152	262	201	83	6.1	3.3	1.8	0.9
Rest of Non Metro Australia	85	203	122	64	3.4	2.5	1.1	0.7
Total *	**2,505**	**8,014**	**10,907**	**9,338**	**100.0**	**100.0**	**100.0**	**100.0**

Source: New South Wales Special Request Internal Migration matrix held by School of Geography and Environmental Science, derived from 1996 and 2001 ABS Census of Population and Housing data

* Includes not stated

This type information provides a rich context for understanding housing market change. An understanding is provided as to which areas and settlement types are subject to population gain or loss, the direction of net population movements, the volume of population movements, as well as to whether population gain or loss is differentiated by age or some other relevant social or demographic variable. Again, through the selection of household reference person as the unit of movement, an approximation of the number of households involved in the movement of population, or which are formed as a result of the movement, can be inferred with some caution.

5.4.2 Net gain/loss by weekly household income

Table 5.7 indicated that a high proportion of the net gain of persons in the Southern Coastal region of NSW consisted of households headed by persons (in 2001) aged between 30 and 64 years. Disaggregation of the net residential movement of these two

age groups by income provides further insight into the potential impact of these movements upon housing demand in the Southern Coastal area.

Table 5.8: Internal migration NSW, net gain/loss as percentage 1996 population, primary household reference persons, 30-64 years, by weekly household income

	<$499	$500-$799	$800-$1499	$1500 plus	All ref. pers. 30-64 years
Wollongong	3.7	3.0	2.4	0.7	2.7
Newcastle	7.9	5.3	4.1	1.0	4.9
Northern Coastal	-0.1	-4.3	-7.7	-12.0	-4.4
Southern Coastal	30.0	20.1	11.8	7.8	19.0
Other Coastal - Far North	17.9	12.1	8.2	3.8	12.1
Other Coastal - Mid North	22.2	12.6	6.3	2.2	12.9
Other Coastal - South	25.5	17.3	8.5	0.6	15.3
Inland Towns	3.2	-0.6	-1.0	-3.2	-0.1
Other Inland	2.9	0.0	-1.5	-3.8	0.1
NSW Remote	-4.8	-8.4	-10.1	-18.7	-8.4
Peri-urban - Sydney	13.5	3.4	9.1	9.5	9.2
Rest of Non Metro Australia	7.0	3.6	1.6	-1.6	3.3
Total	2.6	1.5	1.0	0.7	1.7

Source: New South Wales Special Request Internal Migration matrix held by School of Geography and Environmental Science, derived from 1996 and 2001 ABS Census of Population and Housing data

The table shows that, in the Southern Coastal region, there was a net gain of persons aged 30 to 64 years of 19 per cent, between 1996 and 2001. An examination of the weekly household incomes of these in-movers indicates that households with an income of less than $400 increased by 30 per cent in this period (table 5.8). The data also indicate that households with a weekly household income of $500-$799 increased by 20 per cent as a result of net residential in-movement between 1996 and 2001. The data suggest, therefore, that the growth in housing demand in Southern Coastal NSW in this period was characterised by a significant degree of in-movement of households of low to modest-income. Data not shown in Table 5.8 reveal that this net in-movement was largely from metropolitan Sydney. Significant proportions of net in-movement also came from other metropolitan centres and, to a lesser degree, from other regional locations.

5.4.3 Net gain/loss by dwelling tenure

The customised internal-migration data set purchased for the project can be explored further to ascertain the housing tenure in 2001 of persons between the ages of 30 and 64 years who had moved into in the Southern Coastal region of NSW between 1996 and 2001. Those in-movers with a weekly household income of less than $799 per week are taken to illustrate this application of the data. The data helps in providing a more detailed view of the impact of net residential in-movement upon the housing market of the Southern Coastal region.

Table 5.9: All primary reference persons 2001 by tenure type: In-movers 1996-2001 aged 30-64 years and with weekly household income <$799 by tenure type, In-movers 1996-2001 by tenure type 2001

	Owner/ purchaser	Private rental	Public rental	Other tenure	Total	
2001 residential population	73.1	15.4	4.9	6.6	100	(n = 31,545)
In-movers 30-64 yrs; <$799	61.6	27.1	5.6	5.7	100	n = 3,006)
All in-movers	61.6	25.2	4.3	8.9	100	(n = 7,993)

Source: New South Wales Special Request Internal Migration matrix held by School of Geography and Environmental Science, derived from 1996 and 2001 ABS Census of Population and Housing data

The data show that, between 1996 and 2001, there was a net gain of 3006 primary reference persons aged between 30 and 64 years, who were in households with a weekly household income of less than $799 per week in 2001 (not including persons who were overseas in 1996). Table 5.9 shows that, by 2001, the tenure composition of the residential 'in-movers' was markedly different to all resident primary reference persons in 2001. Therefore, the data suggest that the in-moving population within this income group were more likely to be in private rental tenure than the total 2001 population. The data suggest that the population turnover and growth between 1996 and 2001 had significantly increased demand for private rental dwellings in absolute and proportional terms. Reliance upon private rental appears to have been slightly higher from persons aged 30-64 years on weekly household incomes of less than $799. This may be significant given the relatively high net gain of persons in this age group and income bracket.

5.5 Shoalhaven

The Regional Centre of Shoalhaven, one component of the broader Southern Coastal region considered above, is used here to further illustrate the utility of census internal-migration data in providing supporting analysis for an understanding of housing markets. In this section internal-migration data is used to help understand the changes in household type between 1996 and 2001. In particular, the impact of internal migration upon the growth in couple households with children and lone parent families is examined.

The regional centre of Shoalhaven is the principal urban settlement within the NSW Southern Coastal region, highlighted above. It is one of eleven regional centres identified in the study, with regional centres having been defined as having between 50,000 and 100,000 residents. Only three regional centres had population growth above the non-metropolitan average of 11 per cent between 1996 and 2001, of which Shoalhaven was one – Shoalhaven (NSW, 22 per cent), Coffs Harbour (NSW, 19 per cent) and Mackay (QLD, 18 per cent). All three were coastal centres, distant from capital cities.

A significant demographic indicator with implications for housing demand is the growth or decline of couple families with children. Census data from the master file compiled for the project shows that all eleven regional centres within Australia underwent significant percentage point declines in couple families with children. In the case of the high-population-growth centres of Shoalhaven, Coffs Harbour and Mackay, however, this did not involve an absolute decline in the numbers of couple families with children, which was the case in the other centres. Shoalhaven experienced a significant absolute and percentage increase in this type of household -- 4.3 (365 households) per cent.

The project master-file data also indicates a relatively high rate of growth of single-parent households in Shoalhaven relative to the other regional centres. This suggests that the net residential in-movement into Shoalhaven, between 1996 and 2001, has

contributed to the growth of single-parent families. Table 5.10 corroborates this interpretation. The table shows that the Southern Coastal region, of which Shoalhaven is a principal component, experienced a 15 per cent increase in lone parent reference persons, due to internal migration, by 2001. This was considerably higher than for most other regions and centres presented in the analysis. The next highest net growth in lone parent households was in the 'Other Coastal – Far North' region, at 10 per cent.

The data needs to be treated with some caution, however. This data does not show that these reference persons were lone parents when they moved into Shoalhaven; simply that by 2001 many had become lone parents, thereby increasing the number of lone parent families. Despite this qualification, an insight into the changing composition of household structure due to net internal migration is provided.

Table 5.10: Internal migration net gain loss as percentage of 1996 population (primary reference persons only), NSW, by family type and age

	Cpl WO child (<45)	Cpl WO child (45+)	Cpl with child	Lone parent	Group hhold	Lone person (<45)	Lone persons (45+)	Other/ multi family hholds	All prim. ref. pers
Wollongong	4.7	2.3	2.2	4.8	5.1	3.4	6.1	0.0	3.1
Newcastle	6.7	5.7	3.8	7.6	6.1	3.5	6.9	4.1	4.9
Northern Coastal	-11.3	5.9	-6.7	-10.4	-41.2	-24.3	0.1	-25.3	-7.5
Southern Coastal'	15.8	20.0	12.0	15.3	-1.4	11.4	15.9	4.7	14.8
Other Coastal - Far North	10.3	14.1	9.4	9.8	-14.8	4.5	11.8	-4.3	9.1
Other Coastal - Mid North	8.9	16.1	8.9	5.9	-25.5	-1.1	10.4	-7.0	8.2
Other Coastal - South	10.4	18.2	8.9	7.3	-21.8	3.5	10.8	-17.7	9.7
Inland Towns	3.0	0.0	-1.0	3.6	-6.0	8.3	5.7	-5.1	1.1
Other Inland	0.0	1.2	-0.2	-4.0	-37.3	-4.7	2.7	-15.6	-2.0
NSW Remote	-6.5	-5.6	-10.6	-13.6	-24.4	5.4	0.5	-6.8	-7.3
Peri-urban - Sydney	8.6	13.0	7.2	4.2	-27.0	-5.4	8.8	-9.9	6.0
Rest of Non Metro Aust	5.2	5.2	2.2	2.3	-11.7	0.7	5.9	-7.8	2.5

Source: New South Wales Special Request Internal Migration matrix held by School of Geography and Environmental Science, derived from 1996 and 2001 ABS Census of Population and Housing data

The influx of lone-parent families to Shoalhaven may also help explain the greater reliance of 'in-movers' upon private rental tenure, relative to the incumbent population (as noted above).

Overall, the data suggest that Shoalhaven had a fairly balanced relationship between population and household growth. For example, Shoalhaven had a population growth rate of 22 per cent and a household growth rate of 30.8 per cent between 1991 and 2001. This meant that households grew at 1.4 times the rate of the population in Shoalhaven. By contrast, for instance, the corresponding ratio for Wagga Wagga was 5.1. In part, this likely reflects the significant loss of couple families with children in Wagga Wagga compared with Shoalhaven.

It is likely that the growth in housing demand in high-population-growth regional centres such as Shoalhaven has been modified to some extent by the relatively high rates of growth of couple families, couples with children and single-parent families, which counterbalance the particularly high housing demand generated by sole person households.

5.5.1 Journey-to-work patterns and housing demand

Internal-migration data indicate that housing demand in Shoalhaven has been significantly buoyed by net gains in the retirement and pre-retirement age groups. The usefulness of this information is enhanced by a consideration of the way in which labour local labour markets can either increase or diminish the residential attractiveness of an area.

If the residents of Shoalhaven who are in the labour market can easily find work within Shoalhaven or in surrounding areas, then this is likely to add to the attractiveness of Shoalhaven as a residential location. Conversely, if Shoalhaven can function as a source of employment for employed persons living within commuting distance of Shoalhaven, then housing is stimulated in these surrounding areas. Journey-to-work data provides an insight into such relationships.

An examination of 2001 journey-to-work data shows that 94 per cent of the jobs in Shoalhaven were filled by residents of Shoalhaven. At the same time, 90 per cent of the employed residents of Shoalhaven work in Shoalhaven. This means that, while some Shoalhaven residents work elsewhere, there are also some outside residents who work in Shoalhaven. The Journey-to-work data show that the principal outside work destinations of Shoalhaven residents are Wollongong (839 persons), NSW large coastal areas, the Sydney metropolitan area (804 persons), and small NSW inland areas (162 persons). The data therefore show that, despite the high level of self-containment in Shoalhaven, the Shoalhaven housing market is in some degree supported by the availability of work in outside areas.

Conversely, the outside areas with some residents who rely upon the availability of employment in Shoalhaven are Wollongong (928 persons), Newcastle (31 persons), NSW small inland (44 persons), NSW large coastal (123 persons), and the Sydney metropolitan area (347 persons). As these numbers suggest, Shoalhaven has a greater reliance upon work in outside locations than other locations upon Shoalhaven. Nevertheless, this example demonstrates the way in which local housing markets are ultimately supported in some degree by spatially distant labour markets. The interdependence between Shoalhaven and Wollongong is notable. A more detailed journey-to-work data set, which included information as to the occupation and industry of employment of employed persons, would allow a detailed analysis of the labour market differences and complementarities between these two locations. In turn, a more detailed analysis of the inter-relationship between the labour markets and housing markets of these two areas would be possible.

5.6 Links between internal-migration and journey-to-work patterns

Previous analysis of journey-to-work and internal-migration movements in Metropolitan Melbourne found evidence of an inter-relationship between them (O'Connor and Healy 1999). The research suggested that decisions about residential location in newly-established suburban fringe areas were often contingent upon access to work opportunities in established middle suburban locations. In other cases, decisions about residential location (hence the development of housing markets) appeared to be shaped by socio-economic considerations. For example, in some cases, managerial employees in manufacturing travelled to work locations from more prestigious residential areas, a tendency which was accompanied by a net residential out-movement of managers from lower-socio-economic manufacturing areas. While more detailed data sets would be required to explore any such relationship between Shoalhaven and areas within commuting distance of it, the data examined thus far would provide a strong basis for such an analysis. In particular, the labour market reciprocity between Shoalhaven and Wollongong and between Shoalhaven and Sydney would be valid starting points. On the face of it, there are both strong journey-to-work and internal-migration links between

Shoalhaven and these two cities. Once a journey-to-work link between two locations is established, this may in some cases induce a subsequent residential re-location decision in favour of the previous work destination.

# 6   AN ALTERNATIVE CLASSIFICATION OF NON-METROPOLITAN HOUSING MARKETS

One of the goals of the non-metropolitan housing market project is to develop a classification system of housing markets. Previous chapters have presented one alternative to classifying housing markets based on broad conceptualisation of settlement systems based on size and location within the settlement hierarchy. This chapter presents an alternative approach which is based on the use of statistical techniques to construct a typology or set of ideal types that represent broader patterns and processes. Typology building approaches have their foundations in the early urban sociology research into the spatial structure of cities, and more recently in the understanding of the structure of post-industrial cities and urban regions (Coulton et al. 1996; Massey and Eggers 1993; Berry 1996; Baum et al. 2002; Mikelbank 2004; Baum et al. 2006; Baum 2006). These typologies are not explanations of processes per se, but are 'an attempt to systemize classification in aid of explanation' (Marcuse 1997, 248). They provide a 'richer understanding of complex phenomena' (Mikelbank 2004, 961) and as such provide useful and often powerful insights into the structural bases of local areas, regions or communities. They offer the necessary comparative basis for detailed empirical research on any one area or collection of areas. It is the ability to elucidate the overall structure of localities and regions that makes them useful.

6.1 Methodology and data

Several methods are available to cluster or partition data into meaningful sub-groups. Clustering methods range from approaches that largely involve a process of trial and error to more formal modelling procedures that adopt statistical models to group data. While heuristic approaches have been widely used to cluster spatially based data (see for example Hill et al. 1998; Baum et al 1999) we have utilised a statistically based approach. Details of the clustering procedure are described in Fraley and Raftery (2002), while the use of graphs of means and confidence intervals to interpret differences between groups is set out in Masson and Loftus (2003). An in depth description of the typology building exercise is contained in Baum et al. (2006) and more detailed discussion is presented in attachment 1.

Basically, the clustering procedure takes observations with various characteristics and then groups like observations based on the degree of similarity across given variables. The groups can be expected to differ on some indicators, while some groups may share similar indicators. The clustering of the data is the first stage of the typology building approach. Once the clusters are identified we then consider how each group is similar or different from one another. To achieve this, several options are available including statistical methods such as discriminant analysis. We use a visualisation technique that graphs the 95 per cent confidence intervals for the mean of each variable across each cluster and examines differences between the groups across each graph. This technique has been used elsewhere by Masson and Loftus (2003) in a general sense and specifically by Baum et al. (2006) for building typologies. Using confidence intervals in this way allows the researchers to form inferences about the cluster outcomes that take account of both the cluster mean and also the wider spread of the data. The confidence intervals (CI) are used in two ways (see figure 6.1). Firstly, clusters whereby the CI is clearly different from others without overlap and are above or below the mean are considered to be strongly differentiated on that particular variable. Secondly, in some cases groups of clusters may have CI that overlap but which are above or below the mean for the entire population and variables for which this occurs can also be considered to differentiate the clusters from others. The interpretation of the cluster outcomes then becomes an exercise in comparing outcomes on the interpretation of CIs.

Figure 6.1: Example of using confidence intervals to determine cluster differences

age dependency
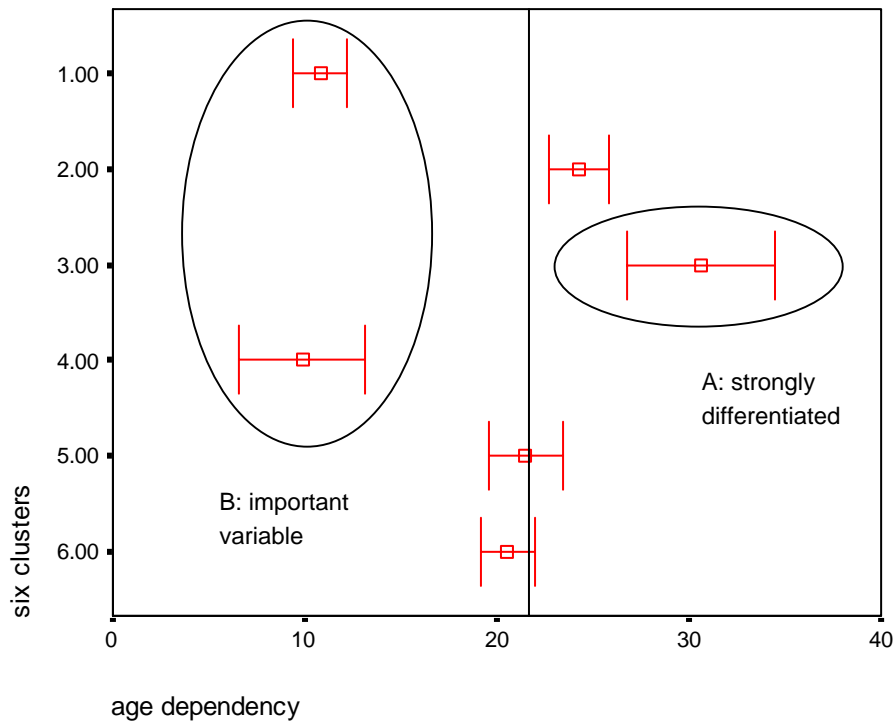
The data used to develop the typology of non-metropolitan housing markets was obtained from Australian Bureau of Statistics Census Data together with data from the ABS Integrated Regional Data Base (IRDB). The set of variables used to develop the clusters was obtained from a wider data set developed as part of the AHURI non-metropolitan housing market project. Twenty individual variables were used in the analysis and these are listed below (table 6.1), together with the source. As the objective of the typology building exercise is to provide an understanding of non-metropolitan housing markets we utilise a range of variables that are thought to be important in differentiating between possible housing market types. The variables chosen represent the optimal range of indicators, given constraints imposed due to data availability. Clearly, data on house price both at a single point in time and across time would have been a useful inclusion. However this was not available in a consistent format across all spatial units used.

Table 6.1: Variables used in analysis

Household change	Percentage change in number of households between 1991 and 2001	Census
Total dwelling change	Percentage change in number of dwellings between 1991 and 2001	Census
% point change owners	Difference in the percentage of owners between 1991 and 2001	Census
% point change purchasers	Difference in the percentage of purchasers between 1991 and 2001	Census
% point change renters	Difference in the percentage of private renters between 1991 and 2001	Census
% point change state housing authority	Difference in the percentage of state housing authority tenants between 1991 and 2001	Census
change occupied dwelling	Percentage change in number of occupied dwellings between 1991 and 2001	Census
% point change unoccupied dwellings	Percentage point change in number of unoccupied dwellings between 1991 and 2001	Census
% urban population	Percentage of the total population classified as urban 2001	IRDB
% point change separate house	Difference in the percentage of separate houses between 1991 and 2001	Census
rent financial stress	Low income renters paying more than 30% of income on rents as a percentage of total renters 2001	Census
mortgage financial stress	Low income purchasers paying more than 30% of income on mortgage repayments as a percentage of total purchasers 2001	Census
Mean ARIA	Mean of the Accessibility and Remoteness Index	IRDB
% owned	Percentage of outright owners 2001	Census
% purchase	Percentage of purchasers 2001	Census
% private rent	Percentage of private renters 2001	Census
% state housing authority	Percentage of state housing authority tenants 2001	Census
% other dwelling (flats etc)	Percentage of dwellings other than separate houses 2001	Census
% non-occupied private dwelling	Percentage of non-occupied private dwellings 2001	Census
Average number of Bedrooms	Average number of bedrooms per dwelling 2001	Census
Average cost new housing approvals ($)	Average cost of new houses approved over 1999, 2000 and 2001	IRDB
Share of new house completions relative to share of population	The ratio of share of new house completions (relative to total national number) to share of national households	IRDB
Share of other dwelling completions relative to share of population	The ratio of share of other dwelling completions (relative to total national number) to share of national households	IRDB

The typology developed in this research combines data using Statistical Local Areas as the unit of analysis. Non-metropolitan SLAs were defined as those outside the major metropolitan statistical divisions. In the majority of cases single SLAs have been used. However in some cases SLAs were combined to make more meaningful spatial units (i.e. regional cities) or were combined because of data considerations. In the latter case changes to SLA boundaries over time has meant that trend data was not available at 2001 boundary levels therefore requiring the aggregating of units. The combined SLAs are listed below in attachment 2. The combining of SLAs resulted in a final data set containing 578 localities. In conducting the analysis those places with populations less than 1000 were excluded, leaving a total of 518 places.

The cluster analysis of the 518 non-metropolitan SLAs resulted in five clusters being chosen (Figure 6.2). This five cluster solution represents the best number of groups as identified in the M-clust clustering procedure. Table 6.2 provides a matrix setting out the main differentiating variables, while table 6.3 provides the cluster profiles for each of the five groups. Tables 6.4 to 6.8 present the individual SLAs included in each cluster. The plots of the 95 % confidence intervals are not presented here but can be obtained from the authors.

Figure 6.2: A typology of non-metropolitan housing markets
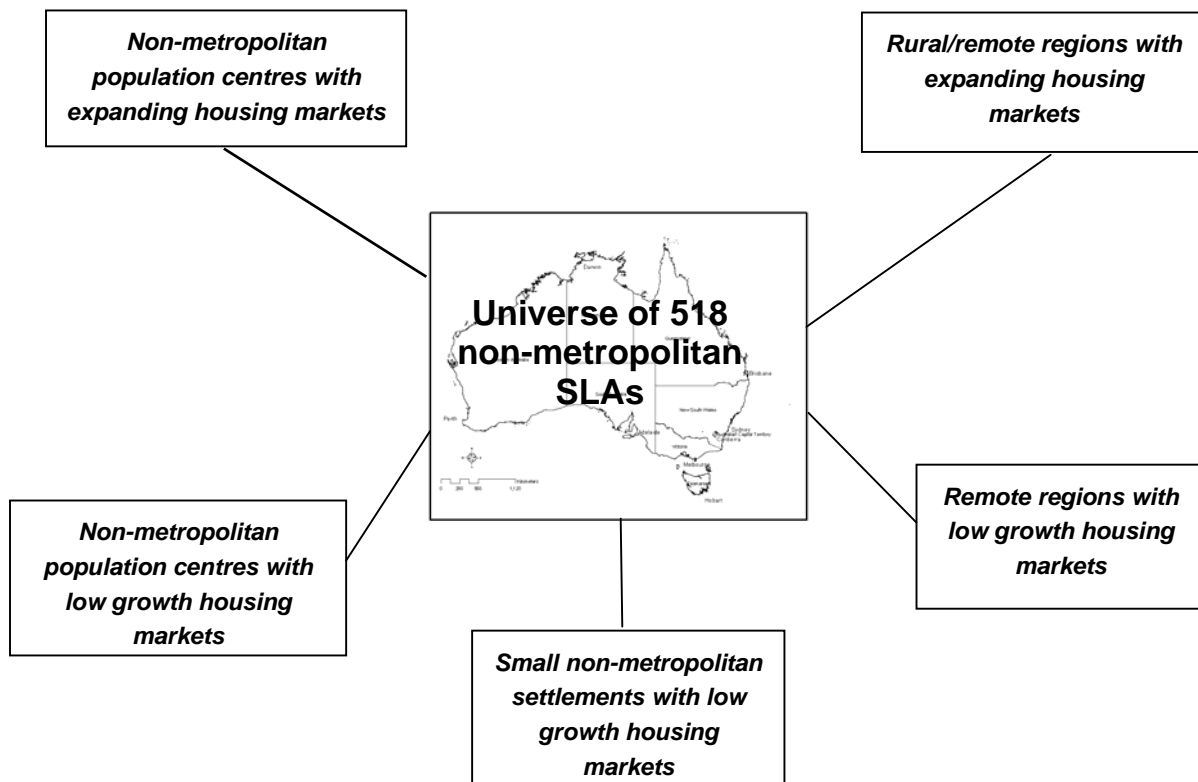
Table 6.2: Key indicators of the five clusters

Cluster	Strongly differentiating variables	Other important variables
Non-metropolitan population centres with expanding housing markets	Population growth (+) Rental financial stress (+) Mean ARIA (-) % Purchasers (+) % renters (-) Change unoccupied private dwelling (-) New home completions (+)	Change in households (+) Change in total dwellings (+) Change in owners (-) Other dwelling completions (+)
Non-metropolitan population centres with low growth housing markets	Rental financial stress (+) Mean ARIA (-) % Purchasers (+) % urban population (+)	Population growth (-) Change in households (-) Change in total dwellings (-) Change in owners (-) % public renters (+)
Rural/remote regions with expanding housing markets	% purchasers (-) % other dwellings (+)	Change in households (+) Change in total dwellings (+) Change in owners (+) Rental financial stress (-) Mean ARIA (+) % owned (-) % private rental (+) % public rental (+) Change unoccupied dwelling (+) Other dwelling completions (+) Average bedrooms (-)
Small non-metropolitan settlements with low growth housing markets	Mean ARIA (-) % owned (+) % purchase (-) % private rental (-) % other dwellings (-)	Population growth (-) Change in households (-) Change in total dwellings (-) Change in owners (+) Other dwelling completions (-)
Remote regions with low growth housing markets	% purchasers (-) % other dwellings (+)	Population growth (-) Change in households (-) Change in total dwellings (-) Change in owners (+) Rent financial stress (-) Other dwelling completions (-) Mean ARIA (+) % owners (-) % private rental (+) Change unoccupied private dwellings (+) Average bedrooms (-)

Table 6.3: Cluster profiles, housing market variables

	Non-metropolitan population centres with expanding housing markets	Non-metropolitan population centres with low growth housing markets	Rural/remote housing markets	Small non-metropolitan settlements with low growth housing markets	Remote regions with low growth housing markets	Total
Average Population 2001	30836.9	16625.3	9896.00	4232.81	2868.04	13246.10
Population growth	28.94	1.30	14.76	-3.32	-0.41	6.15
Household change	40.34	11.40	28.08	6.35	3.08	15.98
total dwelling change	37.49	12.89	36.33	8.87	10.82	18.07
% point change owners	-2.99	-0.96	2.47	0.49	2.23	-0.28
% point change purchasers	3.19	1.56	3.31	1.26	0.64	1.83
% point change renters	0.35	0.66	-1.92	-1.26	-0.25	-0.38
% point change sha	-0.54	-1.68	-3.85	-0.85	-1.18	-1.27
% point change separate dwelling	0.85	-1.8	-0.07	0.27	3.4	0.53
rent financial stress	23.14	18.64	9.63	16.77	7.17	17.10
mortgage financial stress	13.74	10.28	9.49	12.46	11.00	11.77
Mean ARIA	2.53	3.98	12.19	5.22	13.47	5.67
% owned	43.46	42.61	24.00	53.07	30.97	43.98
% purchase	28.67	23.25	15.01	19.82	7.27	20.97
% private rent	17.22	20.80	34.02	14.78	37.01	20.48
% state housing authority tenants	1.83	5.12	6.02	1.59	2.78	3.03
% other dwelling (flats etc)	11.69	14.12	33.75	6.45	20.48	13.00
% un-occupied private dwelling	16.17	11.09	13.36	19.41	17.54	15.90
% point change unoccupied private dwellings	-1.44	1.22	5.67	1.92	6.07	1.74
Average cost new housing approvals ($)	114359.36	119464.37	127681.83	104808.10	98699.81	111836.07
Share of new house completions relative to share of households	1.76	0.69	0.89	0.66	0.56	0.90
Share of other dwelling completions relative to share of households	0.34	0.19	0.69	0.05	0.11	0.20
% population urban	47.75	71.72	56.88	25.12	33.47	45.35
Average number of bedrooms	3.05	3.00	2.84	3.06	2.88	3.01

6.1.1 Non-metropolitan population centres with expanding housing markets

The group of non-metropolitan regions labelled as growth markets are found in all states and comprised 105 individual SLAs or approximately 20 per cent of the total non-metropolitan regions. Specific places included in this group included large regional centres such as Wollongong and Newcastle in New South Wales, Greater Bendigo in Victoria, Cairns and Townsville in Queensland, towns in the Barossa Valley in South Australia, the Busselton region and Margaret River region in Western Australia and Meander Valley and La Trobe in Tasmania. There are some places that might be referred to as sea change localities such as the Sunshine Coast and Gold Coast and others that might be identified as belonging to Burnley and Murphy's (2004) peri-urban turnaround regions or population turnaround regions such as the Bass Coast regions in Victoria.

The cluster stands out in terms of indicators suggesting an expanding housing market. The cluster is differentiated from the other clusters in terms of population growth, level of rental financial stress, the mean ARIA score, the proportion of purchasers and renters, the change in unoccupied private dwellings and the level of new house completions relative to population share. More specifically, this group of SLAs had an above average level of population growth (28.9 per cent), an above average level of households suffering from rental financial stress (23.1 per cent), an above average level of purchasers (28.7 per cent) and an above average share of new home completions relative to the share of population (1.8). The cluster also had below average levels of private renters (17.2 per cent) and had an ARIA index lower than the average (2.5) suggesting that this group of SLAs had better accessibility than others. The cluster also had a below average level of change in unoccupied private dwellings (-1.4) which may also be indicative of a growing market.

While these variables were those which strongly differentiated this cluster from others, the group of 105 SLAs also had an above average change in household numbers (40.3 per cent) and a commensurate change in total dwellings (37.5 per cent). In addition, and mirroring the change in new home completions, this group also had an above average level of other dwelling completions, which includes apartments and flats or units (0.3).

Table 6.4: Non-metropolitan population centres with expanding housing markets

New South Wales	Queensland	Western Australia
Wollongong	Cairns	Mandurah
Newcastle	Townsville	Murray
Queanbeyan	Sunshine Coast	Capel
Great Lakes	Gold Coast	Dardanup
Shoalhaven	Beaudesert – Pt B	Harvey
Wingecarribee	Caboolture – Pt B	Donnybrook-Balingup
Ballina	Caloundra – Hinterland	Waroona
Byron	Caloundra – Rail Corridor	Augusta-Margaret River
Richmond Valley Bal	Esk	Busselton
Tweed - Pt B	Ipswich – South-West	Nannup
Coffs Harbour	Ipswich – West	Albany Bal
Hastings	Laidley	Denmark
Maclean	Maroochy Bal	Chittering
Yarrowlumla	Noosa Bal	Dandaragan
Mulwaree	Burnett	Gingin
Eurobodalla	Hervey Bay	Northam
Hume	Cooloola (excl. Gympie)	Toodyay
Murray	Isis	York
	Kolan	Greenough
South Australia	Miriam Vale	Irwin
Barossa - Barossa	Nanango	Northampton
Barossa - Tanunda	Tiaro	
Light	Woocoo	**Victoria**
Mallala	Cambooya	Greater Geelong
Adelaide Hills Bal	Crow's Nest	Moorabool – Bacchus Marsh
Mount Barker - Central	Jondaryan	Moorabool – Ballan
Mount Barker Bal	Rosalie	Gr. Bendigo – Central
Alexandrina - Coastal	Fitzroy	Macedon Ranges – Romsey
Alexandrina - Strathalbyn	Calliope	Macedon Ranges Bal
Victor Harbor	Livingstone	Delatite – South
Yankalilla	Mackay - Pt A	Mitchell – South
Copper Coast	Sarina	Murrindindi – West
Robe	Thuringowa - Pt B	Alpine – East
	Townsville - Pt B	Bass Coast – Phillip Is.
Tasmania	Cardwell	Bass Coast Bal
Meander Valley		Greater Geelong - Pt B
Latrobe		Surf Coast - East
		Surf Coast - West
		Golden Plains-Sth-East

6.1.2   *Non-metropolitan population centres with low growth housing markets*

A second group of mainly significant population centres was also detected using the clustering approach, but in contrast to the first cluster tend to be characterised by indicators suggesting low growth or stagnant markets. The cluster, labelled the non-metropolitan population centres with low growth housing markets cluster comprises 137 SLAs or approximately 26 per cent of the total. It includes places such as Scone and Grafton in New South Wales, Warrnambool and regions in the La Trobe Valley in Victoria, the regional centres of Mount Gambier and Port Pirie in South Australia, and Geraldton and Bunbury in Western Australia. Tasmania is represented by SLAs

including George Town and Launceston. Many of the SLAs included in this cluster are regional centres or smaller population centres. Additionally, many of the localities are among those identified in the Community Opportunity and Vulnerability report (Baum et al. 1999; Baum et al. 2005; Baum 2006) as being disadvantaged in broad socio-economic terms and suffering from declining economies.

The cluster is differentiated in terms of an above average proportion of households suffering rental financial stress and percentage of purchasers, the mean ARIA index and the percentage of urban population. Specifically, the cluster has above average levels of households suffering rental financial stress (18.6 per cent) and an above average proportion of purchasers (23.2 per cent). The cluster has the highest proportion of urban population (71.7 per cent) and has a below average ARIA mean (4.0). These variables strongly differentiate this cluster from the remaining four groups. In addition, the cluster also has an above average proportion of state housing authority tenants (5.1 per cent) and below average rates of change in population, households, dwellings and the percentage of owners. In particular population growth is only 1.3 per cent, while both household change and dwelling change were below average at appropriately 11 to 12 per cent. The share of outright owners fell by 0.9 percentage points.

Table 6.5: Non-metropolitan population centres with low growth housing markets

New South Wales	Queensland	Victoria
Muswellbrook	Gatton	Colac-Otway – Colac
Scone	Bundaberg	Warrnambool
Singleton	Cooloola - Gympie only	Glenelg – Portland
Lismore	Gayndah	S. Grampians – Hamilton
Richmond Valle - Casino	Kingaroy	Ballarat – Central
Bellingen	Maryborough	Horsham – Central
Grafton	Mundubbera	N. Grampians – Stawell
Nambucca	Murgon	Mildura
Greater Taree	Toowoomba	Swan Hill – Central
Kempsey	Dalby	C. Goldfields – M'borough
Tamworth	Goondiwindi	Mount Alexander – C'maine
Gunnedah	Stanthorpe	Gr. Shepparton
Inverell	Warwick - Central	Campaspe – Echuca
Armidale Dumaresq - City	Balonne	Campaspe – Kyabram
Glen Innes	Murweh	Moira – East
Moree Plains	Roma	Moira – West
Narrabri	Rockhampton	Delatite – Benalla
Dubbo	Gladstone	Mitchell – North
Mudgee	Banana	Wodonga
Narromine	Longreach	Indigo – Pt B
Cobar	Bowen	Wangaratta – Central
Bathurst	Burdekin	E. Gippsland – Bairnsdale
Blayney	Charters Towers	Wellington – Sale
Orange	Hinchinbrook excl. Palm I.	Latrobe - Moe
Greater Lithgow	Atherton	Latrobe - Morwell
Oberon	Cairns - Pt B	Latrobe - Traralgon
Cowra	Johnstone	Baw Baw - Pt B West
Forbes	Mareeba	
Parkes		**South Australia**
Goulburn	**Tasmania**	Barossa - Angaston
Yass	George Town	Clare and Gilbert Valleys
Young	Launceston	Berri & Barmera - Barmera
Bega Valley	Northern Midlands	Berri & Barmera - Berri
Cooma-Monaro	West Tamar	Loxton Waikerie - East
Wagga Wagga	Burnie	Loxton Waikerie - West
Cootamundra	Central Coast	Renmark Paringa - Paringa
Tumut	Devonport	Renmark Paringa - Renmark
Griffith	Waratah/Wynyard	Murray Bridge
Hay		Naracoorte and Lucindale
Leeton	**Western Australia**	Tatiara
Murrumbidgee	Bunbury	Mount Gambier
Albury	Collie	Wattle Range - East
Corowa	Manjimup	Wattle Range - West
Berrigan	Katanning	Port Lincoln
Deniliquin	Albany - Central	Ceduna
Broken Hill	Narrogin	Port Pirie - City
	Moora	Flinders Ranges
	Northam	
	Merredin	
	Geraldton	

6.1.3 Rural/remote regions with expanding housing markets

The third cluster identified in the clustering procedure comprises the smallest number of SLAs (40) and accounts for approximately 7 per cent of the total. Considering the variables that differentiate these SLAs, the cluster can be labelled as a rural/remote housing markets cluster. The cluster includes Parry and Snowy River in New South Wales and Emerald and Mount Isa in Queensland. In South Australia there is Whyalla and Port Augusta while in Western Australia there is Kalgoorlie/Boulder and Exmouth. Eight of the SLAs are in the Northern Territory including Katherine and Alice Springs.

The variables that differentiate this cluster from the others are the percentage of purchasers and the percentage of other dwellings. Specifically, the cluster has a below average percentage of purchasers (15.0 per cent) and has an above average percentage of other dwellings (33.8 per cent). While only two variables differentiate this cluster from the others, the group of 40 SLAs also had indicators on a range of other variables that might be considered important. Three indicators accounting for change were above the average for the total non-metropolitan group. Change in households and change in total dwellings were above average (28.1 percent and 36.3 per cent) and there was a positive change in both the proportion of owners between 1991 and 2001 (2.5 percentage points) and change in unoccupied private dwellings (5.7 percentage points). The cluster also had below average levels of households suffering rental financial stress (9.6 per cent), proportions of owners (24 per cent) and average numbers of bedrooms (2.8). The cluster had an above average mean ARIA index (12.2) illustrating the level of remoteness and above average levels of both private renters (34.0 per cent) and state housing authority tenants (6.0 per cent). Finally, the cluster also had an above average level of other dwelling completions, relative to population size (0.7).

Table 6.6: Rural/remote regions with expanding housing markets

New South Wales	Western Australia	Northern Territory
Parry	Kalgoorlie/Boulder	Coomalie
Snowy River	Coolgardie	South Alligator
	Ngaanyatjarraku	East Arnhem - Bal
Queensland	Esperance	Katherine
Duaringa	Carnarvon	Tennant Creek
Emerald	Exmouth	Alice Springs
Belyando	Shark Bay	Petermann
Whitsunday	Wiluna	Sandover - Bal
Aurukun	Mullewa	
Cook (excl. Weipa)	East Pilbara	**South Australia**
Douglas	Port Hedland	Whyalla
Torres	Ashburton	Port Augusta
Carpentaria	Roebourne	Roxby Downs
Mount Isa	Halls Creek	
	Wyndham-East Kimberley	
	Broome	
	Derby-West Kimberley	

6.1.4 Small non-metropolitan settlements with low growth housing markets

A fourth group of SLAs comprises 185 SLAs or approximately 36 per cent of the total and comprises SLAs that are smaller than the large regional centres of cluster 1 and 2, but ones which are more regional than remote. It is labelled as a cluster of small non-metropolitan settlements with low growth housing markets. SLAs include Dungog and Manilla in New South Wales, Queenscliffe and Ararat in Victoria, Kilcoy and Pittsworth

in Queensland, the District Council of Grant and the Mid Murray region in South Australia, Boddington and Cranbrook in Western Australia and Central Highlands and Huon Valley in Tasmania.

The cluster is differentiated from others in terms of the proportion of owners, purchasers and renters and also in terms of the percentage of other dwellings and ARIA index. Specifically, the cluster has an above average proportion of owners (53.1 per cent)—the highest for any cluster—and a below average proportion of both purchasers (19.8 per cent) and private renters (14.8 per cent). The mean ARIA index is below average (5.2) indicating that this cluster has SLAs with better accessibility than SLAs in some other clusters and it has a below average proportion of other dwelling types (6.3 per cent).

Apart from these variables which differentiate this cluster from others the cluster has below average indicators of change including population growth (-3.3 per cent) change in households (6.4 per cent) and change in total dwellings (8.9 per cent). The cluster does however, record a small increase in the share of outright owners which increased by 0.5 percentage points. Reflecting the stagnant nature of this cluster, it had a below average proportion of other dwelling completions relative to household numbers (0.1).

Table 6.7: Small non-metropolitan settlements with low growth housing markets

New South Wales	Victoria	Queensland	Western Australia
Dungog	Queenscliffe	Boonah	Boddington
Gloucester	Golden Plains – North-West	Kilcoy	Boyup Brook
Merriwa	Greater Geelong – Pt C	Biggenden	Bridgetown-Greenbushes
Murrurundi	Corangamite – North	Kilkivan	Gnowangerup
Kyogle	Corangamite – South	Monto	Jerramungup
Copmanhurst	Moyne – North-East	Wondai	Kojonup
Pristine Waters - Nymboida	Moyne – North-West	Chinchilla	Cranbrook
Pristine Waters - Ulmarra	Moyne – South	Clifton	Plantagenet
Barraba	Glenelg – Heywood	Inglewood	Pingelly
Bingara	Glenelg – North	Murilla	Wagin
Manilla	S. Grampians – Wannon	Pittsworth	Corrigin
Nundle	S. Grampians Bal	Taroom	Beverley
Quirindi	Hepburn – East	Waggamba	Cunderdin
Yallaroi	Hepburn – West	Wambo	Dalwallinu
Guyra	Moorabool – West	Bungil	Quairading
Severn	Ararat	Warroo	Wongan-Ballidu
Tenterfield	Pyrenees – North	Jericho	Bruce Rock
Uralla	Pyrenees – South	Mount Morgan	Kellerberrin
Walcha	N. Grampians – St Arnaud	Mirani	Ravensthorpe
Coolah	West Wimmera	Dalrymple	Coorow
Coonabarabran	Hindmarsh	Eacham	
Gilgandra	Yarriambiack – North		**Tasmania**
Wellington	Yarriambiack – South	**South Australia**	Central Highlands
Bogan	Buloke – North	Kangaroo Island	Derwent Valley - Pt B
Coonamble	Buloke – South	Adelaide Hills - North	Glamorgan/Spring Bay
Warren	Gannawarra	Barunga West	Huon Valley
Cabonne	C. Goldfields Bal	Yorke Peninsula – North	Kingborough - Pt B
Evans - Pt A	Loddon – North	Yorke Peninsula - South	Southern Midlands
Evans - Pt B	Loddon – South	Goyder	Tasman
Rylstone	Mount Alexander Bal	Wakefield	Break O'Day
Bland	Macedon Ranges – Kyneton	Mid Murray	Dorset
Lachlan	Campaspe – Rochester	Karoonda East Murray	Circular Head
Weddin	Campaspe – South	Southern Mallee	Kentish
Boorowa	Delatite – North	The Coorong	
Crookwell	Strathbogie	Lacepede	
Gunning	Murrindindi – East	Grant	
Harden	Indigo – Pt A	Cleve	
Tallaganda	Towong – Pt A	Elliston	
Bombala	Alpine - West	Franklin Harbor	
Coolamon	Towong - Pt B	Kimba	
Gundagai	E. Gippsland - Orbost	Le Hunte	
Holbrook	E. Gippsland - South-West	Lower Eyre Peninsula	
Tumbarumba	E. Gippsland Bal	Tumby Bay	
Urana	Wellington - Alberton	Streaky Bay	
Conargo	Wellington - Avon	Northern Areas	
Jerilderie	Wellington - Maffra	Peterborough	
Wakool	Wellington - Rosedale	Port Pirie C, Dists Bal	
Balranald	Baw Baw - Pt A	Mount Remarkable	
Wentworth	Latrobe Bal		
Junee	Baw Baw - Pt B East		
Lockhart	South Gippsland - Central		
Narrandera	South Gippsland - East		
Temora	South Gippsland - West		
Carrathool			
Culcairn			

6.1.5 Remote regions with low growth housing markets

A final cluster of 49 SLAs (approximately 9 per cent) was made up of mainly remote localities with small populations. SLAs in this cluster included Walgett and Bourke in New South Wales and Tara and Paroo in Queensland. Three remote SLAs in South Australia were included (Unincorporated Flinders Ranges, Coober Pedy and Unincorporated Far North) while Western Australian SLAs included Lake Grace and Mount Magnet. The SLA of West coast was the only Tasmanian locality in this cluster while in the Northern Territory SLAs included Bathurst-Melville and Daly. Interestingly there are no regions or localities identified in this cluster in Victoria.

The cluster is strongly differentiated from the other clusters in terms of the percentage of purchasers and the share of other dwelling types. Specifically, the cluster had a low proportion of purchasers (7.3 per cent) and an above average proportion of other dwelling types (20.5 per cent). Besides these variables, the cluster also has below average levels of population growth (-0.4 per cent), household growth (3.1 per cent) and dwelling change (10.82 per cent) and above average levels of change in owners (2.2 percentage points) and change in unoccupied private dwellings (17.5 percentage points). The cluster also has a below average levels of households suffering rental financial stress (7.2 per cent), proportion of owners (31.0 per cent) and average number of bedrooms (2.9) and an above average proportion of private renters (37.0 per cent). The cluster also has a below average share of other dwelling completions relative to population share (0.1).

Table 6.8: Remote regions with low growth housing markets

New South Wales	South Australia
Walgett	Unincorp. Flinders Ranges
Bourke	Coober Pedy
Brewarrina	Unincorp. Far North
Central Darling	
Unincorp. Far West	**Western Australia**
	Lake Grace
Queensland	Yilgarn
Millmerran	Laverton
Tara	Leonora
Booringa	Dundas
Paroo	Meekatharra
Quilpie	Mount Magnet
Bauhinia	
Peak Downs	**Tasmania**
Barcaldine	West Coast
Blackall	
Winton	**Northern Territory**
Broadsound	Bathurst-Melville
Nebo	Jabiru
Hinchinbrook - Palm Island	West Arnhem
Cook - Weipa only	Daly
Etheridge	Groote Eylandt
Herberton	Nhulunbuy
Burke	Elsey - Bal
Cloncurry	Gulf
Flinders	Victoria
McKinlay	Tableland
Richmond	Tennant Creek - Bal
	Tanami

The analysis presented in this chapter has provided a typology of non-metropolitan localities based on a range of housing market variables. It is presented as an alternative way of considering non-metropolitan housing markets to that presented earlier. The cluster analysis presented five groups of SLAs and the analysis of confidence intervals suggested that the five groups could be usefully differentiated by several of the variables included in the analysis. In some ways the findings from the typology building exercise need to be tempered by the fact that the outcomes are influenced by the available data variables. Some useful variables such as house price data were not available and this may limit the usefulness of the outcomes presented in the chapter. Moreover, it may well be that there are more fine grain details that have been lost due to the broad aggregate nature of the analysis used.

These issues aside, the analysis has suggested that non-metropolitan housing markets can be differentiated in terms of the extent to which they are expanding and/or stagnant or facing slower growth, the make up of the dwelling stock and the broad nature of tenure differences. The analysis also suggests that when compared to other studies looking at the nature of socio-economic differences in non-metropolitan Australia (i.e. Baum 2006), although many of the places that were noted as having low growth in their housing markets were associated with declining socio-economic performance and disadvantage, growing markets were characterised by both places that were advantaged and those places that were disadvantaged. This differentiation is important as it gives some insight to potential drivers of housing market performance and links to policy. How does one weigh up the needs of a declining region with those of regions that are facing expansion? In particular it can be expected that those regions with declining economic positions (e.g. old economy manufacturing regions) will need different policy mechanisms that address broader socio-economic issues and reverse population decline as unemployed workers leave these places in search of better economic conditions. Growing regions on the other hand will face a different set of questions including ones associated with the social, economic and environmental sustainability of such growth. The policy balance requires careful consideration of likely goals and outcomes and importantly needs to be informed by a suitable evidence base.

ATTACHMENT 1: M-CLUST DETAIL

The basic process associated with developing typologies used in research including that by Hill et al. (1998), Baum et al. (1999) and Mikelbank (2004) has been to cluster observations (usually suburbs or other spatially based aggregate) based on similarities across a range of social and economic data. The resulting clusters or groups allow the intrinsic structure of the clustered data to be determined when no other information, other than the observed values are available. Several methods are available to cluster or partition data into meaningful sub-groups. Clustering methods range from approaches that are largely heuristic to more formal modelling procedures that adopt statistical models to group data and usually follow either a hierarchical approach or adopt an approach whereby observations are relocated among tentative clusters (Fraley and Raftery 1998). The use of heuristic approaches have been widespread, but have raised questions regarding the most appropriate clustering method to use and once clustering is completed, the most meaningful number of clusters to consider. Generally it appears that the former issue is addressed by referring to what previous studies have used (Ward's method is often used) or in a worse case scenario, relying on the default method provided by a particular statistical package. The second issue has been addressed, often by looking for significant changes in the agglomeration schedule (in the case of hierarchical analysis) or in many cases as suggested by Hill et al. (1998) by choosing clusters based on their face validity.

Stepping away from these heuristic approaches, there has been increasing recognition that cluster analysis can be based on the use of probability models and in particular the use of parameterised Gaussian (normal) mixture models (Bock 1996; Fraley and Raftery 2002). These models are quite flexible in accommodating data with widely varying characteristics (see http://www.stat.washington.edu/fraley/mclust/soft.shtml for more details). This model-based method of clustering is often preferable because it allows statistical inference to be made about the components of the mixture model and hence probability statements about the classification of observations to a cluster. That is, it provides a measure of uncertainty about how well each observation is classified.

The three stages in the clustering process using mixture models are:

→ initialization via model-based hierarchical agglomerative clustering

→ maximum likelihood estimation of the mixture model using the EM algorithm, and

→ selection of the model and the number of clusters using the Bayesian Information Criterion (BIC).

The MCLUST procedure is a software package for implementing this model-based clustering strategy through the statistical software S-PLUS and R. It includes functions that combine hierarchical clustering, EM algorithm for estimation of mixture models and the BIC for model selection. It also provides visual graphics for displaying the clustering and classification results.

The procedure estimates Gaussian mixture models for a range of component sizes as well as various parameterisations of the covariance matrix for each mixture component. The parameterisations of the covariance matrix consider the volume, shape and orientation of the clusters and are denoted:

1. EII: spherical, equal volume

2. VII: spherical, unequal volume

3. EEI: diagonal, equal volume, equal shape

4. VVI: diagonal, varying volume, varying shape

5. EEE: ellipsoidal, equal volume, shape and orientation

6. VVV: ellipsoidal, varying volume, shape and orientation

Given the maximum likelihood estimates for the chosen mixture model, MCLUST produces the conditional probabilities that each observation belongs to the different groups associated with the components (clusters) of the mixture model. The final classification of an observation is made to the group which corresponds to the greatest conditional probability for that observation.

A distinctive advantage of a model-based clustering approach is that it allows the researcher to use model selection techniques such as the Bayesian Information Criterion (Schwarz 1978) to compare outcomes. This gives a systematic means of selecting both the parameterisation of the model and also the number of clusters. By computing the BIC for the single cluster model for each parameterisation and for the mixture likelihood with the optimal parameters from EM for 2 through to M clusters a matrix of BIC values is produced. This provides a value for each possible combination of parameterisation and number of clusters. Additionally, to aid in interpretation the BICs are plotted for each model, allowing the researcher to determine the optimal clusters and model parameterisation. The 'ideal' cluster is that in which the BIC is highest and shows significant gain.

ATTACHMENT 2: LIST OF COLLAPSED SLAS

Shoalhaven	Shoalhaven A; Shoalhaven B
Lismore	Lismore A; Lismore B
Coffs Harbour	Coffs Harbour A; Coffs Harbour B
Hastings	Hastings A; Hastings B
Parry	Parry A; Parry B
Armidale Dumaresq	Armidale Dumaresq (A) – City; Armidale Dumaresq (A) - balance
Inverell	Inverell A; Inverell B
Dubbo	Dubbo A; Dubbo B
Blayney	Blayney A; Blayney B
Cabonne	Cabonne A; Cabonne B; CabonneC
Yarrowlumla	Yarrowlumla A; Yarrowlumla B
Wagga Wagga	Wagga Wagga A; Wagga Wagga B
Colac-Otway	Colac-Otway Colac; Colac-Otway North; Colac-Otway South
Ballarat	Ballarat Central; Ballarat inner north; Ballarat north; Ballarat south
Horsham	Horsham central; Horsham balance
Mildura	Mildura A; Mildura B
Swan Hill	Swan Hill Central; Swan Hill Robinvale; Swan Hill balance
Greater Bendigo	Greater Bendigo central; Greater Bendigo Eaglehawk; Greater Bendigo inner east; Greater Bendigo inner north; Greater Bendigo inner west; Greater Bendigo S'saye; Greater Bendigo pt B
Greater Shepparton	Greater Shepparton A; Greater Shepparton B west; Greater Shepparton B east
Wangaratta	Wangaratta Central; Wangaratta north; Wangaratta south
Burnett	Burnett A; Burnett B
Hervey Bay	Hervey Bay A; Hervey Bay B
Toowoomba	Toowoomba Central; Toowoomba north-east; Toowoomba north-west; Toowoomba south west; Toowoomba west
Cambooya	Cambooya A; Cambooya B
Crows Nest	Crows nest A; Crows nest B
Jondaryan	Jondaryan A; Jondaryan B
Rosalie	Rosalie A; Rosalie B
Warwick	Warwick central; Warwick east; Warwick north; Warwick west
Calliope	Calliope A; Calliope B
Fitzroy	Fitzroy A; Fitzroy B
Mackay	Mackay A; Mackay B
Capel	Capel A; Capel B
Dardanup	Dardanup A; Dardanup B
Harvey	Harvey A; Harvey B
Kalgoorlie/ Boulder	Kalgoorlie/ Boulder A; Kalgoorlie/ Boulder B
Greenough	Greenough A; Greenough B
Launceston	Launceston inner; Launceston B; Launceston C
George Town	George Town A; George Town B
Meander Valley	Meander Valley A; Meander Valley B
Northern Midlands	Northern Midlands A; Northern Midlands B
West Tamar	West TamarA; West Tamar B
Burnie	Burnie A; Burnie B
Central coast	Central coast A; Central coast B
Latrobe	LatrobeA; Latrobe B
Waratah/Wynyard	Waratah/Wynyard A; Waratah/Wynyard B
Alice Springs	Alice springs Charles; Alice Springs Heavitree; Alice Springs Larapinta; Alice Springs Ross; Alice Springs Stuart

7 CONCLUSION

This study 'Trends in Australian non-metropolitan housing markets, 1991-2001' possessed two main goals: i.) to quantify the nature and extent of changes in the decade 1991-2001 within non-metropolitan housing markets in Australia and, integral to achieving this first goal, ii.) to construct the first national non-metropolitan housing market database to hold empirical information on population, housing and labour markets for the census years 1991, 1996 and 2001.

This included the challenge of producing a spatially consistent framework, which placed settlements with similar housing markets into the same category. Central to this objective was the development of an analytical framework for classifying the several hundred settlements that are widely dispersed across the landscape of regional Australia. One approach was to impose from the outset a settlement classification system rigorously drawn from previous research publications (as discussed in Wulff et al. 2005), the results of which are presented in Chapters 3-5. A second approach (as exemplified in Chapter 6) involved the deduction of housing market 'clusters' based on the discrimination of statistical associations determined from a selection of existing variables.

A subsidiary objective was to include a wide range of variables potentially significant for the analysis and future monitoring of housing markets.

A further objective was to produce a database that was potentially useful for policy analysis at different spatial scales, including the national, state, regional and local levels.

All of the above objectives were achieved by the project.

For methodological reasons explained in this Final Report, the ultimate database produced by the research team is a collection of separate major data files.

Housing price data also could not be easily incorporated, as it related to individual dwelling transactions, rather than to summary price measures that could be applied to larger spatial units. In addition to the above limitation, the incomplete and uncoordinated nature of property records for some Australian states prevented the full utilisation of housing price data.

The 'Master all State SLA' file includes such an immensely detailed and varied range of data items, mainly in the form of raw data counts, that it presents significant problems for analysis. Even where data was able to be easily integrated into the principal database, analysis proved cumbersome, requiring extensive and time consuming data manipulation before any meaningful results could be derived. Use of the database will therefore often remain expensive. The alternative cluster analysis approach, discussed in Chapter 6, represents potential savings in this respect. However, this approach may involve a loss of analytical detail. There may be an associated tendency to mischaracterise and over generalise the nature of different housing markets. Ultimately, however, there is a trade off between simplicity and complexity.

The research supports the contention that a national database can be a flexible research tool and gives a valuable perspective on Australian housing markets. It can provide an analytical overview at the state and national level that is not readily available otherwise. In addition, it can also facilitate analysis at the local and regional levels. Analysis can either conform to jurisdictional boundaries or transcend them to provide significant regional perspectives. State governments may be unaware of how widespread, or limited, some housing market trends are and, therefore, fail to develop a full appreciation of the dynamics involved. It is therefore recommended that the non-metropolitan database be update annually (with items such as property prices) and at census years. We recommend the continued use of the SLA as the spatial unit 'building block' of the data base. Moreover, we recommend that the database continue to be

formulated on the nine settlements used in most of the analysis presented in this Report. By continuing with an SLA based data-file alongside a 'settlement file', there is on-going flexibility to group the data into different spatial units, and, more particularly, identify some settlements that may 'shift' settlement types between census periods (such as moving from a small to a medium coastal or vice versa).

Only some of the many possible applications of the database have been presented in this Final Report. Data can be used to develop a useful and consistent set of measures to monitor housing market performance. (Some measures related to rent assistance; dwelling sales; ageing and so forth are offered in this Report). The data can explore a range of policy related questions, at several different geographic scales. It can be used in both descriptive and predictive forms of analysis.

Given the data intensive nature of maintaining and further developing the database, it is recommended that the Australian Bureau of Statistics play a coordinating role in the development and management of a database such as this. Management by ABS would help to broaden the distribution and use of a database beyond its current restrictions to the research team and Monash University.

It is vitally important that property price records from each state be included in a national non-metropolitan database in order to provide a more complete picture of national housing market performance.

In terms of substantive findings, the following trends were observed. Housing markets during the period 1991-2001 were remarkably dynamic. There was a noticeable reduction in the polarisation between growing and contracting housing markets in the later half of the study period. Nevertheless, the pattern of growth in the larger regional centres and in coastal regions was noticeable, as was the tendency for decline to occur in small inland and remote settlements and the settlement type described as 'other towns'. Secondly, significant spatial variation in housing markets occurred at all scales, both across and within 'settlement types' and 'clusters', regardless of the analytical approach taken. Third, pervasive ageing of the Australian population was significant for household formation in a range of settlement types, not the least of which was retirement centres, including coastal settlements. A key trend was the significant growth in the construction of units, flats and apartments, rather than separate-detached dwellings. This was related to the diversification of households living in non-metropolitan Australia. In some cases, household numbers continued to grow while absolute population numbers declined. Social disadvantage was found to persist in regions even where housing markets were thriving, suggesting the need for increasing levels of rent assistance. Peri-urban settlements were areas of consistent growth in housing markets.

In conclusion, the diversity of markets outside the capital cities requires sophisticated information for developing appropriate policy responses. This study has contributed to bringing together the necessary information in a systematic format and has highlighted both the difficulties of such a task and the benefits.

8 REFERENCES

Australian Bureau of Statistics (ABS) (2006), *Dwelling Unit Commencements, Australia, Preliminary*, March, Cat. No. 8750.0.

Baum, S. (2006) A typology of socio-economic advantage and disadvantage in Australia's large non-metropolitan cities, towns and regions, *Australian Geographer*, 37, 2, pp. 233 – 258

Baum, S. Stimson, R. O'Connor, K. Mullins, P. and Davis, R. (1999) Community Opportunity and Vulnerability in Australia's Cities and Towns: Characteristics, Patterns and Implications. Brisbane: University of Queensland Press.

Baum, S. Mullins, P. Stimson, R. and O'Connor, K. (2002) Communities of the post-industrial city, *Urban Affairs Review*, 37, 2, pp. 322-357.

Baum, S. Haynes, M. van Gellecum, Y. and Han, J. H. (2006) Advantage and disadvantage across Australia's extended metropolitan regions: A typology of socio-economic outcomes, *Urban Studies*, 43, 9, pp. 1549 - 1579

Bock, H. (1996) Probabilistic approaches in cluster analysis, *Computational Statistics and Data Analysis*, 23, pp. 5-28.

Burnley, I. and Murphy, P. (2004) *Sea change: Movement from Metropolitan to Arcadian Australia*, University of New South Wales Press, Sydney

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.

GISCA (2004) *ARIA++: Accessibility/Remoteness Index of Australia Plus Plus (Version 2.0), Methodology*, The National Centre for Social Applications of GIS, The University of Adelaide, Adelaide.

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

Haberkorn, G., Kelson, S., Tottenham, R., and Magpantay, C. (2004), *Country Matters: Social Atlas of Rural and Regional Australia*, Bureau of Rural Sciences, Canberra.

Hill, E., Brennan, J. and Wolman, H. (1998) What is a central city in the United States? Applying a statistical technique for developing typologies, *Urban Studies*, 35, 11, pp. 1935-1969.

Hugo, G. (2003), 'Changing Patterns of Population Distribution', in Khoo, S. and McDonald, P. eds. *The Transformation of the Australian Population*, 1970-2030. University of New South Wales Press, Sydney, pp. 185-218.

Maclennan, D. and Whitehead, C. (1996), 'Housing economics – an evolving agenda', *Housing Studies*, vol. 11, No. 3, pp. 341-345.

Marcuse, P. (1997) The enclave, the citadel and the ghetto: What has changed in the post-Fordist U.S. city? *Urban Affairs Review*, 33, 2, 228-264.

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, 3: 203-220.

McKenzie, F. (1996), *Beyond the Suburbs: Population change in the major exurban regions of Australia*, Commonwealth Department of Immigration and Ethnic Affairs, Canberra.

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

O'Connor, K. and Healy, E. (1999) 'The links between labour markets and housing markets in Melbourne', Research conducted for the Australian Housing and Urban Research Institute, Melbourne.

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

Schwarz, G (1978) Estimating the dimension of a model, *The Annals of Statistics*, 6, pp. 461-464.

Wulff, M., Legg, S., Reynolds, M., Healy, E., Hooper, A. and Baum, S. (2005) *Trends in Australian non-metropolitan housing markets, 1991-2001*, Positioning Paper, Australian Housing and Urban Research Institute, Melbourne.

APPENDIX 1 SLA BY SETTLEMENT TYPE

The total number of Statistical Local Areas in Australia in 2001 was 1,353. Of these, 592 were located in state capital city Statistical Divisions and, therefore, were not analysed in this report. Of the remaining 761 SLAs, the database holds information for 743 SLAs and these are listed below, grouped by non-metropolitan settlement type. Very limited data exist for the remaining 18 non-metropolitan SLAs (also listed below) and hence these were excluded from analysis.

Regional cities (2001 population 100,000 plus)

NEW SOUTH WALES

Wollongong
115054400 Kiama (A)
115056900 Shellharbour (C)
115058450 Wollongong (C)

Newcastle
110051720 Cessnock (C)
110054650 Lake Macquarie (C)
110055050 Maitland (C)
110055901 Newcastle (C) - Inner
110055902 Newcastle (C) - Remainder
110056400 Port Stephens (A)

QUEENSLAND

Gold Coast
310053497 Arundel
310053501 Ashmore
310053504 Benowa
310053507 Biggera Waters
310053512 Bilinga
310053513 Broadbeach
310053515 Broadbeach Waters
310053517 Bundall
310053521 Burleigh Heads
310053523 Burleigh Waters
310053525 Carrara-Merrimac
310053527 Coolangatta
310053531 Coombabah
310053532 Coomera-Cedar Creek
310053533 Currumbin
310053535 Currumbin Waters
310053537 Elanora
310053541 Ernest-Molendinar
310053542 Guanaba-Currumbin Valley
310053543 Helensvale
310053545 Hollywell
310053547 Hope Island
310053553 Labrador
310053555 Main Beach-Broadwater
310053557 Mermaid Beach
310053562 Mermaid Wtrs-Clear Is. Wtrs
310053563 Miami
310053565 Mudgeeraba
310053567 Nerang
310053571 Oxenford
310053573 Palm Beach
310053575 Paradise Point
310053577 Parkwood
310053582 Robina
310053583 Runaway Bay
310053585 Southport
310053586 Stephens
310053587 Surfers Paradise
310053591 Tugun
310053593 Worongary-Tallai

Cairns
350052062 Cairns (C) - Barron
350052065 Cairns (C) - Central Suburbs
350052066 Cairns (C) - City
350052068 Cairns (C) - Mt Whitfield
350052072 Cairns (C) - Northern Suburbs
350052074 Cairns (C) - Trinity
350052076 Cairns (C) - Western Suburbs
350102078 Cairns (C) - Pt B

VICTORIA

Geelong
210052751 Bellarine - Inner
210052752 Corio - Inner
210052753 Geelong
210052754 Geelong West
210052755 Newtown
210052756 South Barwon - Inner
210102757 Greater Geelong (C) - Pt B
210152758 Greater Geelong (C) - Pt C

Sunshine Coast
310152132 Caloundra (C) - Caloundra N.
310152133 Caloundra (C) - Caloundra S.
310152135 Caloundra (C) - Kawana
310154902 Maroochy (S) - Buderim
310154905 Maroochy (S) - Coastal North
310154907 Maroochy (S) - Maroochydore
310154911 Maroochy (S) - Mooloolaba
310154914 Maroochy (S) - Nambour
310154917 Maroochy (S) Bal in S C'st SSD
310155752 Noosa (S) - Noosa-Noosaville
310155755 Noosa (S) - Sunshine-Peregian
310155756 Noosa (S) - Tewantin

Townsville-Thuringowa
345106801 Kelso
345106804 Kirwan
345106807 Thuringowa (C) - Pt A Bal
345156831 Thuringowa (C) - Pt B
345057001 Aitkenvale
345057003 City
345057007 Cranbrook
345057012 Currajong
345057014 Douglas
345057015 Garbutt
345057018 Gulliver
345057023 Heatley
345057026 Hermit Park
345057027 Hyde Park-Mysterton
345057031 Magnetic Island
345057033 Mt Louisa-Mt St John-Bohle
345057034 Mundingburra
345057038 Murray
345057041 North Ward-Castle Hill
345057044 Oonoonba-Idalia-Cluden
345057047 Pallarenda-Shelley Beach
345057051 Pimlico
345057054 Railway Estate
345057058 Rosslea
345057062 Rowes Bay-Belgian Gardens
345057065 South Townsville
345057068 Stuart-Roseneath
345057071 Vincent
345057074 West End
345057078 Wulguru
345157084 Townsville (C) - Pt B

Large regional centres (2001 population 50,000-100,000)

NEW SOUTH WALES

Shoalhaven
115076951 Shoalhaven (C) - Pt A
115106952 Shoalhaven (C) - Pt B
Coffs Harbour
125011801 Coffs Harbour (C) - Pt A
125051804 Coffs Harbour (C) - Pt B
Wagga Wagga
150057751 Wagga Wagga (C) - Pt A
150107754 Wagga Wagga (C) - Pt B

QUEENSLAND

Toowoomba
320016901 Toowoomba (C) - Central
320016903 Toowoomba (C) - North-East
320016905 Toowoomba (C) - North-West
320016906 Toowoomba (C) - South-East
320016908 Toowoomba (C) - West
340054762 Mackay (C) - Pt A
340104765 Mackay (C) - Pt B

TASMANIA

Launceston
615054011 Launceston (C) - Inner
615054012 Launceston (C) - Pt B
615104013 Launceston (C) - Pt C

VICTORIA

Ballarat
220050571 Ballarat (C) - Central
220050572 Ballarat (C) - Inner North
220050573 Ballarat (C) - North
220050574 Ballarat (C) - South
Greater Bendigo
235052621 Gr. Bendigo (C) - Central
235052622 Gr. Bendigo (C) - Eaglehawk
235052623 Gr. Bendigo (C) - Inner East
235052624 Gr. Bendigo (C) - Inner North
235052625 Gr. Bendigo (C) - Inner West
235052626 Gr. Bendigo (C) - S'saye
235102628 Gr. Bendigo (C) - Pt B
Greater Shepparton
240052831 Gr. Shepparton (C) - Pt A
240102834 Gr. Shepparton (C) - Pt B East
240102835 Gr. Shepparton (C) - Pt B West
Latrobe
255053811 Latrobe (C) - Moe
255053814 Latrobe (C) - Morwell
255053815 Latrobe (C) - Traralgon
255053818 Latrobe (C) Bal

Regional towns (2001 population 20,000 - 50,000)

NEW SOUTH WALES

Greater Taree
125103350 Greater Taree (C)
Albury
155050050 Albury (C)
Lismore
120074851 Lismore (C) - Pt A
120104854 Lismore (C) - Pt B
Tamworth
130057300 Tamworth (C)
Dubbo
135012601 Dubbo (C) - Pt A
135052604 Dubbo (C) - Pt B
Orange
140056150 Orange (C)
Bathurst
140050450 Bathurst (C)
Queanbeyan
145056450 Queanbeyan (C)
Griffith
150153450 Griffith (C)
Armidale
130150111 Armidale Dumaresq (A) - City
130150112 Armidale Dumaresq (A) Bal
Broken Hill
160101250 Broken Hill (C)
Goulburn
145103150 Goulburn (C)

VICTORIA

Warrnambool
215016730 Warrnambool (C)
Mildura
230054781 Mildura (RC) - Pt A
230104782 Mildura (RC) - Pt B
Swan Hill
230156611 Swan Hill (RC) - Central
230156614 Swan Hill (RC) - Robinvale
230156616 Swan Hill (RC) Bal
Wangaratta
245106701 Wangaratta (RC) - Central
245106704 Wangaratta (RC) - North
245106705 Wangaratta (RC) - South
Bairnsdale-Lakes Entrance
250052111 E. Gippsland (S) - Bairnsdale
Wodonga
245057170 Wodonga (RC)

QUEENSLAND

Bundaberg
315051810 Bundaberg (C)
Gladstone
330103350 Gladstone (C)
Hervey Bay
315073751 Hervey Bay (C) - Pt A
315103754 Hervey Bay (C) - Pt B
Maryborough
315104950 Maryborough (C)
Mount Isa
355055300 Mount Isa (C)

SOUTH AUSTRALIA

Whyalla
435058540 Whyalla (C)
Mount Gambier
425104620 Mount Gambier (C)

WESTERN AUSTRALIA

Albany
515100081 Albany (C) - Central
515100084 Albany (C) Bal
Bunbury
510031190 Bunbury (C)
Kalgoorlie-Boulder
530014281 Kalgoorlie/Boulder (C) - Pt A
Mandurah
510015110 Mandurah (C)
Busselton
510151260 Busselton (S)

TASMANIA

Devonport
620051610 Devonport (C)

NORTHERN TERRITORY

Alice Springs
710400201 Alice Springs (T) - Charles
710400203 Alice Springs (T) - Heavitree
710400205 Alice Springs (T) - Larapinta
710400207 Alice Springs (T) - Ross
710400208 Alice Springs (T) - Stuart

Other towns (2001 population 10,000 - 20,000)

NEW SOUTH WALES

Grafton
125053200 Grafton (C)
Greater Lithgow
140103300 Greater Lithgow (C)

VICTORIA

Ararat
220150260 Ararat (RC)
Horsham
225053191 Horsham (RC) - Central
225053194 Horsham (RC) Bal

QUEENSLAND

Charters Towers
345152300 Charters Towers (C)
Ipswich
310203974 Ipswich (C) - South-West

SOUTH AUSTRALIA

Port Augusta
435206090 Port Augusta (C)
Port Lincoln
430056300 Port Lincoln (C)
Murray Bridge
420105040 Murray Bridge (RC)
Port Pirie
435156451 Port Pirie C, Dists (M) - City
435156454 Port Pirie C, Dists (M) Bal

WESTERN AUSTRALIA

Geraldton
535033500 Geraldton (C)

TASMANIA

Burnie
620050611 Burnie (C) - Pt A
620100612 Burnie (C) - Pt B

Large coastal (2001 population 30,000 – 50,000)

NEW SOUTH WALES

120100250 Ballina (A)
145150550 Bega Valley (A)
145152750 Eurobodalla (A)
110103400 Great Lakes (A)
125033751 Hastings (A) - Pt A
120057551 Tweed (A) - Pt A
115108350 Wingecarribee (A)

Medium coastal (2001 population 20,000 – 30,000)

NEW SOUTH WALES

120101350 Byron (A)
125103754 Hastings (A) - Pt B
125104350 Kempsey (A)
120107552 Tweed (A) - Pt B

QUEENSLAND

310200557 Beaudesert (S) - Pt B
330154550 Livingstone (S)
310204918 Maroochy (S) Bal

Small coastal (2001 population < 20,000)

NEW SOUTH WALES

125050600 Bellingen (A)
125052250 Copmanhurst (A)
110102700 Dungog (A)
110103050 Gloucester (A)
120104550 Kyogle (A)
125055000 Maclean (A)
125055700 Nambucca (A)
125056421 Pristine Waters (A) - Nymboida
125056422 Pristine Waters (A) - Ulmarra
120106611 Richmond Valley (A) - Casino
120106612 Richmond Valley (A) Bal

VICTORIA

255200741 Bass Coast (S) - Phillip Is.
255200744 Bass Coast (S) Bal
210151755 Colac-Otway (S) - South
215051832 Corangamite (S) - South
250052113 E. Gippsland (S) - Orbost
215102411 Glenelg (S) - Heywood
215102413 Glenelg (S) - Portland
215055496 Moyne (S) - South
210106080 Queenscliffe (B)
255206171 South Gippsland (S) - Central
255206174 South Gippsland (S) - East
210106493 Surf Coast (S) - East
210106495 Surf Coast (S) - West
250156811 Wellington (S) - Alberton
250156814 Wellington (S) - Rosedale
250156815 Wellington (S) - Sale

Small coastal continued

QUEENSLAND

350100200	Atherton (S)	350102900	Eacham (S)
340101700	Broadsound (S)	330053151	Fitzroy (S) - Pt A
345151900	Burdekin (S)	330153154	Fitzroy (S) - Pt B
315051981	Burnett (S) - Pt A	345153801	Hinchinbrook (S) excl. Palm I.
315101984	Burnett (S) - Pt B	315104000	Isis (S)
310202031	Caboolture (S) - Pt B	350104150	Johnstone (S)
330102101	Calliope (S) - Pt A	315104400	Kolan (S)
330152104	Calliope (S) - Pt B	340105050	Mirani (S)
310202136	Caloundra (C) - Hinterland	315105100	Miriam Vale (S)
310202138	Caloundra (C) - Rail Corridor	310205758	Noosa (S) Bal
350102200	Cardwell (S)	340106550	Sarina (S)
315102532	Cooloola (S) (excl. Gympie)	315106850	Tiaro (S)
315102535	Cooloola (S) - Gympie only	340107330	Whitsunday (S)
350102800	Douglas (S)	315107500	Woocoo (S)

SOUTH AUSTRALIA

410200221	Alexandrina (DC) - Coastal	425056860	Robe (DC)
415050430	Barunga West (DC)	420107800	The Coorong (DC)
415051560	Copper Coast (DC)	410208050	Victor Harbor (DC)
430051960	Franklin Harbor (DC)	415108130	Wakefield (DC)
425102250	Grant (DC)	425108341	Wattle Range (DC) - East
425053360	Lacepede (DC)	425108344	Wattle Range (DC) - West
410053920	Mallala (DC)	410208750	Yankalilla (DC)
435204830	Mount Remarkable (DC)	415058831	Yorke Peninsula (DC) - North
435155120	Northern Areas (DC)		

WESTERN AUSTRALIA

510150280	Augusta-Margaret River (S)	535033851	Greenough (S) - Pt A
510031401	Capel (S) - Pt A	535153854	Greenough (S) - Pt B
510101404	Capel (S) - Pt B	510033991	Harvey (S) - Pt A
535151470	Carnamah (S)	510103994	Harvey (S) - Pt B
535151610	Chapman Valley (S)	535154060	Irwin (S)
525052590	Dandaragan (S)	510205180	Manjimup (S)
510032661	Dardanup (S) - Pt A	510016230	Murray (S)
510102664	Dardanup (S) - Pt B	510206300	Nannup (S)
515102730	Denmark (S)	510108820	Waroona (S)
525053570	Gingin (S)		

TASMANIA

615150210	Break O'Day (M)	620053811	Latrobe (M) - Pt A
620050811	Central Coast (M) - Pt A	620103812	Latrobe (M) - Pt B
620100812	Central Coast (M) - Pt B	615054211	Meander Valley (M) - Pt A
620101210	Circular Head (M)	610054812	Sorell (M) - Pt B
615151810	Dorset (M)	610055010	Southern Midlands (M)
615052211	George Town (M) - Pt A	610055210	Tasman (M)
615102212	George Town (M) - Pt B	620055411	Waratah/Wynyard (M) - Pt A
610052410	Glamorgan/Spring Bay (M)	620105412	Waratah/Wynyard (M) - Pt B
610053010	Huon Valley (M)	615055811	West Tamar (M) - Pt A
620103210	Kentish (M)	615105812	West Tamar (M) - Pt B
610053612	Kingborough (M) - Pt B		

Small inland (2001 population < 20,000)

NEW SOUTH WALES

130100400 Barraba (A)	130105100 Manilla (A)
155150650 Berrigan (A)	110105250 Merriwa (A)
130100700 Bingara (A)	130205300 Moree Plains (A)
140150800 Bland (A)	135055400 Mudgee (A)
140050851 Blayney (A) - Pt A	145105450 Mulwaree (A)
140100852 Blayney (A) - Pt B	155155500 Murray (A)
145201000 Bombala (A)	150155550 Murrumbidgee (A)
145101050 Boorowa (A)	110105600 Murrurundi (A)
140051401 Cabonne (A) - Pt A	110105650 Muswellbrook (A)
140101402 Cabonne (A) - Pt B	130205750 Narrabri (A)
140151403 Cabonne (A) - Pt C	150105800 Narrandera (A)
155151850 Conargo (A)	135055850 Narromine (A)
135051950 Coolah (A)	130106000 Nundle (A)
150102000 Coolamon (A)	140106100 Oberon (A)
145202050 Cooma-Monaro (A)	140156200 Parkes (A)
135052100 Coonabarabran (A)	130056301 Parry (A) - Pt A
150102200 Cootamundra (A)	130106304 Parry (A) - Pt B
155102300 Corowa (A)	130106500 Quirindi (A)
140152350 Cowra (A)	140106750 Rylstone (A)
145102400 Crookwell (A)	110106800 Scone (A)
155102450 Culcairn (A)	130156850 Severn (A)
155152500 Deniliquin (A)	110107000 Singleton (A)
140052801 Evans (A) - Pt A	145207050 Snowy River (A)
140102802 Evans (A) - Pt B	145107250 Tallaganda (A)
140152900 Forbes (A)	150107350 Temora (A)
135052950 Gilgandra (A)	130157400 Tenterfield (A)
130153000 Glen Innes (A)	155107450 Tumbarumba (A)
150103500 Gundagai (A)	150107500 Tumut (A)
130103550 Gunnedah (A)	130157650 Uralla (A)
145103600 Gunning (A)	155107700 Urana (A)
130153650 Guyra (A)	155157800 Wakool (A)
145103700 Harden (A)	130157850 Walcha (A)
155103900 Holbrook (A)	140158100 Weddin (A)
155054050 Hume (A)	135058150 Wellington (A)
130104201 Inverell (A) - Pt A	155158300 Windouran (A)
130154202 Inverell (A) - Pt B	130108600 Yallaroi (A)
155154250 Jerilderie (A)	145058651 Yarrowlumla (A) - Pt A
150104300 Junee (A)	145108652 Yarrowlumla (A) - Pt B
140154600 Lachlan (A)	145108700 Yass (A)
150154750 Leeton (A)	145108750 Young (A)
150104950 Lockhart (A)	

VICTORIA

245150111 Alpine (S) - East	240204851 Mitchell (S) - North
245150112 Alpine (S) - West	240204854 Mitchell (S) - South
255050831 Baw Baw (S) - Pt A	240104901 Moira (S) - East
255100834 Baw Baw (S) - Pt B East	240104904 Moira (S) - West
255100835 Baw Baw (S) - Pt B West	220105151 Moorabool (S) - Bacchus Marsh
230101271 Buloke (S) - North	220105154 Moorabool (S) - Ballan
230101272 Buloke (S) - South	220105155 Moorabool (S) - West
240101371 Campaspe (S) - Echuca	235105431 Mount Alexander (S) - C'maine
240101374 Campaspe (S) - Kyabram	235105434 Mount Alexander (S) Bal
240101375 Campaspe (S) - Rochester	215055491 Moyne (S) - North-East
240101376 Campaspe (S) - South	215055493 Moyne (S) - North-West
235101671 C. Goldfields (S) - M'borough	240205621 Murrindindi (S) - East
235101674 C. Goldfields (S) Bal	240205622 Murrindindi (S) - West
210151751 Colac-Otway (S) - Colac	225055811 N. Grampians (S) - St Arnaud
210151754 Colac-Otway (S) - North	225055814 N. Grampians (S) - Stawell
215051831 Corangamite (S) - North	220155991 Pyrenees (S) - North
240151951 Delatite (S) - Benalla	220155994 Pyrenees (S) - South
240151954 Delatite (S) - North	255206175 South Gippsland (S) - West
240151955 Delatite (S) - South	215106261 S. Grampians (S) - Hamilton
250052115 E. Gippsland (S) - South-West	215106264 S. Grampians (S) - Wannon
250052117 E. Gippsland (S) Bal	215106265 S. Grampians (S) Bal
230152250 Gannawarra (S)	240156430 Strathbogie (S)
215102412 Glenelg (S) - North	245056671 Towong (S) - Pt A
210152491 Golden Plains (S) - North-West	245156672 Towong (S) - Pt B
210152492 Golden Plains (S) - South-East	250156812 Wellington (S) - Avon
220102911 Hepburn (S) - East	250156813 Wellington (S) - Maffra
220102912 Hepburn (S) - West	225056890 West Wimmera (S)
225102980 Hindmarsh (S)	255107458 Yarra Ranges (S) - Pt B
245053351 Indigo (S) - Pt A	225107631 Yarriambiack (S) - North
245103352 Indigo (S) - Pt B	225107632 Yarriambiack (S) - South
235103943 Loddon (S) - North	
235103945 Loddon (S) - South	
235204131 Macedon Ranges (S) - Kyneton	
235204134 Macedon Ranges (S) - Romsey	
235204135 Macedon Ranges (S) Bal	

Small inland continued

330150350 Banana (S)	310204450 Laidley (S)
325050650 Bendemere (S)	320055000 Millmerran (S)
315100700 Biggenden (S)	315105150 Monto (S)
310200800 Boonah (S)	330155350 Mount Morgan (S)
320012151 Cambooya (S) - Pt A	315105450 Mundubbera (S)
320052154 Cambooya (S) - Pt B	315105500 Murgon (S)
320052350 Chinchilla (S)	320055550 Murilla (S)
320052400 Clifton (S)	315105650 Nanango (S)
320012551 Crow's Nest (S) - Pt A	340105700 Nebo (S)
320052554 Crow's Nest (S) - Pt B	315105900 Perry (S)
320052650 Dalby (T)	320056050 Pittsworth (S)
330152850 Duaringa (S)	325056400 Roma (T)
315102950 Eidsvold (S)	320016451 Rosalie (S) - Pt A
310203050 Esk (S)	320056454 Rosalie (S) - Pt B
310203250 Gatton (S)	320056600 Stanthorpe (S)
315103300 Gayndah (S)	320056700 Tara (S)
320053600 Goondiwindi (T)	320057100 Waggamba (S)
320053900 Inglewood (S)	320057150 Wambo (S)
320014201 Jondaryan (S) - Pt A	320057262 Warwick (S) - Central
320054204 Jondaryan (S) - Pt B	320057263 Warwick (S) - East
310204250 Kilcoy (S)	320057265 Warwick (S) - North
315104300 Kilkivan (S)	320057266 Warwick (S) - West
315104350 Kingaroy (S)	315107450 Wondai (S)

410150125 Adelaide Hills (DC) - North	420053791 Loxton Waikerie (DC) - East
410150128 Adelaide Hills (DC) Bal	420053794 Loxton Waikerie (DC) - West
410200224 Alexandrina (DC) - Strathalbyn	420054210 Mid Murray (DC)
410050311 Barossa (DC) - Angaston	410154551 Mount Barker (DC) - Central
410050314 Barossa (DC) - Barossa	410154554 Mount Barker (DC) Bal
410050315 Barossa (DC) - Tanunda	425055090 Naracoorte and Lucindale (DC)
420050521 Berri & Barmera (DC) - Barmera	435155400 Orroroo/Carrieton (DC)
420050524 Berri & Barmera (DC) - Berri	435155540 Peterborough (DC)
415101140 Clare and Gilbert Valleys (DC)	420056671 Renmark Paringa (DC) - Paringa
435201830 Flinders Ranges (DC)	420056674 Renmark Paringa (DC) - Renmark
415102110 Goyder (DC)	420107290 Southern Mallee (DC)
420103080 Karoonda East Murray (DC)	425057630 Tatiara (DC)
410053650 Light (DC)	

525100560 Beverley (S)	520056440 Narrogin (T)
510100630 Boddington (S)	520056510 Narrogin (S)
510200770 Boyup Brook (S)	525106650 Northam (T)
510200840 Bridgetown-Greenbushes (S)	525106720 Northam (S)
520050910 Brookton (S)	520057140 Pingelly (S)
515051050 Broomehill (S)	515107210 Plantagenet (S)
525151120 Bruce Rock (S)	525107350 Quairading (S)
525051680 Chittering (S)	515058120 Tambellup (S)
510101890 Collie (S)	525108190 Tammin (S)
520102100 Corrigin (S)	535158260 Three Springs (S)
515102240 Cranbrook (S)	525108330 Toodyay (S)
520052310 Cuballing (S)	525158400 Trayning (S)
525102450 Cunderdin (S)	525058540 Victoria Plains (S)
510102870 Donnybrook-Balingup (S)	520058610 Wagin (S)
525102940 Dowerin (S)	520058680 Wandering (S)
525103710 Goomalling (S)	520058890 West Arthur (S)
515054340 Katanning (S)	520059100 Wickepin (S)
525154410 Kellerberrin (S)	520059170 Williams (S)
515054550 Kojonup (S)	525109310 Wongan-Ballidu (S)
525155460 Merredin (S)	515059380 Woodanilling (S)
535155530 Mingenew (S)	525109450 Wyalkatchem (S)
525055600 Moora (S)	525109730 York (S)

610051010 Central Highlands (M)	615054611 Northern Midlands (M) - Pt A
610051512 Derwent Valley (M) - Pt B	615104612 Northern Midlands (M) - Pt B
615104212 Meander Valley (M) - Pt B	

710050700 Coomalie (CGC)	
710302200 Katherine (T)	

Remote (mean ARIA > 6)

NEW SOUTH WALES

155200300 Balranald (A)	135102150 Coonamble (A)
135100950 Bogan (A)	150153850 Hay (A)
135151150 Bourke (A)	135107900 Walgett (A)
135151200 Brewarrina (A)	135107950 Warren (A)
150151600 Carrathool (A)	155208200 Wentworth (A)
160101700 Central Darling (A)	160108809 Unincorp. Far West
135151750 Cobar (A)	

QUEENSLAND

335050150 Aramac (S)	350103100 Etheridge (S)
350100250 Aurukun (S)	355053200 Flinders (S)
325050300 Balonne (S)	350103700 Herberton (S)
335050400 Barcaldine (S)	345153804 Hinchinbrook (S) - Palm Island
335050450 Barcoo (S)	335053850 Ilfracombe (S)
330150500 Bauhinia (S)	335054050 Isisford (S)
340100600 Belyando (S)	330154100 Jericho (S)
335050750 Blackall (S)	335054700 Longreach (S)
325050850 Booringa (S)	355054800 McKinlay (S)
335050900 Boulia (S)	350104850 Mareeba (S)
340100950 Bowen (S)	355055250 Mornington (S)
325051750 Bulloo (S)	325055600 Murweh (S)
325051850 Bungil (S)	325055800 Paroo (S)
355051950 Burke (S)	330155850 Peak Downs (S)
355052250 Carpentaria (S)	325056150 Quilpie (S)
355052450 Cloncurry (S)	355056300 Richmond (S)
350102501 Cook (S) (excl. Weipa)	335056650 Tambo (S)
350102504 Cook (S) - Weipa only	320056750 Taroom (S)
350102600 Croydon (S)	350106950 Torres (S)
345152700 Dalrymple (S)	325057200 Warroo (S)
335052750 Diamantina (S)	335057400 Winton (S)
330153000 Emerald (S)	

SOUTH AUSTRALIA

430101010 Ceduna (DC)	430107490 Streaky Bay (DC)
430051190 Cleve (DC)	430057910 Tumby Bay (DC)
435251330 Coober Pedy (DC)	415058834 Yorke Peninsula (DC) - South
430051750 Elliston (DC)	420059039 Unincorp. Riverland
410102750 Kangaroo Island (DC)	430109249 Unincorp. West Coast
430053220 Kimba (DC)	435059389 Unincorp. Whyalla
430053570 Le Hunte (DC)	435159459 Unincorp. Pirie
430053710 Lower Eyre Peninsula (DC)	435209529 Unincorp. Flinders Ranges
435256970 Roxby Downs (M)	435259589 Unincorp. Far North

WESTERN AUSTRALIA

540100250 Ashburton (S)	535105250 Meekatharra (S)
545100980 Broome (S)	530055390 Menzies (S)
535051540 Carnarvon (S)	535155670 Morawa (S)
530051960 Coolgardie (S)	535105810 Mount Magnet (S)
535152030 Coorow (S)	525155880 Mount Marshall (S)
535102380 Cue (S)	525155950 Mukinbudin (S)
525102520 Dalwallinu (S)	535156020 Mullewa (S)
545102800 Derby-West Kimberley (S)	535106160 Murchison (S)
520053010 Dumbleyung (S)	525156370 Narembeen (S)
530103080 Dundas (S)	530056620 Ngaanyatjarraku (S)
540053220 East Pilbara (S)	535156790 Northampton (S)
530103290 Esperance (S)	525156860 Nungarin (S)
535053360 Exmouth (S)	535157000 Perenjori (S)
515053640 Gnowangerup (S)	540057280 Port Hedland (T)
545053920 Halls Creek (S)	530107420 Ravensthorpe (S)
515054130 Jerramungup (S)	540107560 Roebourne (S)
530054284 Kalgoorlie/Boulder (C) - Pt B	535107630 Sandstone (S)
515054480 Kent (S)	535057770 Shark Bay (S)
520104620 Kondinin (S)	535058470 Upper Gascoyne (S)
525104690 Koorda (S)	525159030 Westonia (S)
520104760 Kulin (S)	535109250 Wiluna (S)
520104900 Lake Grace (S)	545059520 Wyndham-East Kimberley (S)
530054970 Laverton (S)	535109590 Yalgoo (S)
530055040 Leonora (S)	525159660 Yilgarn (S)

Remote continued

TASMANIA

615152010 Flinders (M)	620155610 West Coast (M)
620103410 King Island (M)	

NORTHERN TERRITORY

710152000 Jabiru (T)	710252409 Nhulunbuy
710353800 Tennant Creek (T)	710301409 Elsey - Bal
710050759 Cox-Finniss	710301809 Gulf
710100609 Bathurst-Melville	710304409 Victoria
710153309 South Alligator	710353409 Tableland
710154809 West Arnhem	710354009 Tennant Creek - Bal
710200809 Daly	710403009 Petermann
710251209 East Arnhem - Bal	710403209 Sandover - Bal
710251609 Groote Eylandt	710403609 Tanami

Excluded SLAs

Off-shore/migratory

185019779 Off-Shore Areas & Migratory (NSW)
285019779 Off-Shore Areas & Migratory (VIC)
385019779 Off-Shore Areas & Migratory (QLD)
485019779 Off-Shore Areas & Migratory (SA)
585019779 Off-Shore Areas & Migratory (WA)
685019779 Off-Shore Areas & Migratory (TAS)
785019779 Off-Shore Areas & Migratory (NT)

Territories

910051009 Jervis Bay Territory
910052009 Territory of Christmas Island
910053009 Territory of Cocos (Keeling) Islands

Zero population in 2001

215058469 Lady Julia Percy Island
255208649 Bass Strait Islands
415058969 Unincorp. Yorke
420109109 Unincorp. Murray Mallee

Very small populations in 2001

355058809 Unincorp. Islands
430059179 Unincorp. Lincoln
255208529 French Island

Lord Howe Island

125108859 Lord Howe Island

Note: the Australian Capital Territory has only one SLA outside the Canberra (metro) SD and, therefore, is not analysed as a separate state/territory. The data relating to this one SLA is, however, included in aggregate, Australia-wide non-metropolitan analyses.

APPENDIX 2 SUMMARY OF DATA SOURCES

1. Australian Bureau of Statistics (ABS)

   Census products:

   → Time Series Profile (TSP) 2001

   → Expanded Community Profile (ECP) 2001

   → Basic Community Profile (BCP) 1991, 1996 and 2001

   → Geographic boundaries (ASGC 2001 Census edition; digital boundaries from Census Basics CD-ROM, cat. no. 2045.0)

   → 1991 CD to 2001 SLA concordance; 1996 CD to 2001 SLA concordance

   → ASGC Remoteness Classification/Structure 2001 (Remoteness Areas: 'RA')

   → Special request matrices: migration and journey to work

   Other ABS products:

   → Integrated Regional Database (IRDB) 2004 edition

   → National Localities Index (January 2005; ASGC 2004 release)

2. State Government departments: property sale prices

   → LANDATA, Victorian State Government Department of Sustainability and Environment

   → Land Services Group, South Australian State Government Department for Administrative and Information Services

   → Regulation and Valuation Research, Western Australian State Government Department of Land Information

   → Land and Property Information, New South Wales Government Department of Lands (though data was not analysed)

3. Bureau of Transport and Regional Economics (BTRE): Australian Government Department of Transport and Regional Services

   → Industry structure database

4. The National Centre for Social Applications of Geographical Information Systems (GISCA)

   → Accessibility/Remoteness Index of Australia (ARIA ++)

APPENDIX 3 IRDB DATA SAMPLE

Example of "Item Information" from the IRDB: the following description shows that the dwelling commencement data are available for each of the years 1991 to 2001. In each year, however, the data are provided for spatial units defined in different editions of the ASGC. The program could not, in all cases, apportion the data to the 2001 Statistical Local Areas without significant 'hands-on' manipulation and as a consequence, only 1996 to 2001 figures were examined. After further assessment of these variables, it was found that the accuracy of the 2001 figures was uncertain and thus the analysis focused only on the period 1996 to 2000.

Name: Dwelling Commencements Total Number Of New Houses (A)

Brief name: Dwling Comm'ts No. New Hses

Identifier: 1337

Collection: BCOS

Frequency: Annual

Summable: True

Units of Measure: no

Description: The number of new houses commenced, as notified by local and other government authorities.

 For the purposes of this statistical series, a dwelling is regarded as being commenced on the date when:

 (a) the building is first inspected by a building inspector or surveyor, whether the work is passed or not. In general, the first inspection is undertaken at the foundations or footings stage of construction; or

 (b) the building is determined as commenced by a building inspector or surveyor.

 A house is defined as a detached building predominantly used for long term residential purposes and consisting of only one dwelling unit. Thus, detached "granny flats" and detached dwelling units (such as caretakers' residence) associated with non-residential buildings are defined as houses for the purpose of these statistics.

 Dwelling Commencement data is not available for the Northern Territory, the Australian Capital Territory or Australia.

Level Message: (Aust),State,SD,SSD,SLA[91-01]

Selectable: True

Availability:

ASGC Ed9: Areas Available - All Areas. For Annual Time Period of 1991;

ASGC Ed2.1: Areas Available - All Areas. For Annual Time Period of 1992;

ASGC Ed2.2: Areas Available - All Areas. For Annual Time Period of 1993;

ASGC Ed2.3: Areas Available - All Areas. For Annual Time Period of 1994;

ASGC Ed2.4: Areas Available - All Areas. For Annual Time Period of 1995;

ASGC Ed2.5: Areas Available - All Areas. For Annual Time Period of 1996;

ASGC Ed96: Areas Available - All Areas. For Annual Time Period of 1997;

ASGC Ed96: Areas Available - All Areas. For Annual Time Period of 1998;

ASGC Ed98: Areas Available - All Areas. For Annual Time Period of 1999;

ASGC Ed99: Areas Available - All Areas. For Annual Time Period of 2000;

ASGC Ed2000: Areas Available - All Areas. For Annual Time Period of 2001;

AHURI Research Centres

Queensland Research Centre
RMIT-NATSEM Research Centre
Southern Research Centre
Swinburne-Monash Research Centre
Sydney Research Centre
UNSW-UWS Research Centre
Western Australia Research Centre