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A multivariate study of medium density housing development and neighbourhood change within Australian cities

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The introduction of medium density housing development within suburban areas has been favoured by government as a means of improving the efficiency of land use, reducing the costs associated with the delivery of government infrastructure and services, increasing the opportunity for affordable housing, promoting home ownership and balancing social mix. However it has been hypothesised that such development may be having a negative impact on local neighbourhoods in terms of social structure, for example reducing diversity as measured by economic status and family makeup or in terms of local housing market performance as measured by price. This paper considers whether such outcomes are able to be measured in terms of social structure and housing market performance within four Australian cities, Adelaide, Perth, Sydney and Melbourne between 2001 and 2006. The analysis is conducted at a disaggregated level to more accurately measure impacts at the local level. The paper attempts to identify whether medium density housing development has any impact on housing market performance at suburb level as measured by median price, if there are associated changes in neighbourhood structure as measured by social constructs using the technique of principal components analysis and to note any significant difference between cities in terms of impacts.

Key words: medium density housing, neighbourhood, social structure

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Introduction

The introduction of medium density housing development within suburban areas has been favoured by government as a means of improving the efficiency of land use, reducing the costs associated with the delivery of government infrastructure and services (Quirk, 2008), increasing the opportunity for affordable housing, promoting home ownership and balancing social mix. However it has been hypothesised that such development may be having a negative impact on local neighbourhoods in terms of social structure, for example reducing diversity as measured by economic status and family makeup or in terms of local housing market performance as measured by price (Bramley et al, 2007). On the other hand concern has been expressed by social housing providers that such infill or renewal may result in a reduction in the stock of affordable housing, in the displacement of original residents and in considerable community disruption (AHIU, 2008).

This paper considers whether such outcomes are able to be measured in terms of social structure and housing market performance within four Australian cities, Adelaide, Perth, Sydney and Melbourne between 2001 and 2006. The analysis is conducted at a disaggregated level to more accurately measure impacts at the local level. The paper attempts to identify whether medium density housing development has any impact on housing market performance at suburb level as measured by median price (RP Data, 2008), if there are associated changes in neighbourhood structure as measured by social constructs using the technique of principal components analysis and to note any significant difference between cities in terms of impacts.

Medium density housing is defined as housing which is 'attached' and includes dwelling forms such as one, two or three blocks of flats, home units, attached townhouses, villa units, terrace houses, semidetached houses and maisonettes (ABS, 2006). The technique of principal components analysis (SPSS, 1993) is used to identify housing and social constructs using Australian Bureau of Statistics (ABS) census data for 2001 and 2006 (ABS, 2006a) for all Statistical Suburbs (SSCs) within the Statistical Divisions (SDs) of Adelaide, Melbourne, Sydney and Perth.

Review of the impacts of medium density development

For cities in Australia, the introduction of medium density housing development within suburban areas has been seen as a fundamental step towards improving social and economic outcomes for local neighbourhoods (Kearns & Mason, 2007). It can be achieved by means of local council and state planning regimes, through the rehabilitation of public housing stock or as a response to market demand for greater housing choice (Buxton & Tiemans, 2005). However while a fundamental shift within the Australian suburb in terms of housing form and sociology has been reported by Johnson (2006), commentators such as Dodson and Gleeson (unpub) suggest that the impact of various urban densities on the social structure and economic viability of local neighbourhoods has not been examined in any systematic way.

Overall the identification and classification of urban areas along lines of social constructs has been a useful area of housing research in that such analysis has allowed for a better understanding of housing needs (Meen, 2001; Meen & Meen, 2003; Bunker, et al, 2005) residential submarkets (Reed, 2001; Lockwood & Coffee, 2006; Jackson et al 2007), buyer behaviour (Ibrahim & Ong, 2004), and social polarisation (Reynolds & Wulff, 2005; Baum et al, 1999). The origins of this approach lie in the early work of Shevky and Bell (1955) who used census data to apply social area analysis to Los Angeles and San Francisco and hypothesized that the social make up of these two cities could best be understood along the lines of socio-economic status, family status and ethnic status. These they termed 'social constructs'. This line of enquiry has been productive with other studies producing similar results using census data (Jones, 1969; Rees, 1970). Murdie (1969) used the concept of social structure to produce a model in which the social constructs of economic status, family status and ethnic status were given a spatial dimension atop a 'physical space', implying that such social constructs could be distinguished by location. As suggested by Bunker et al (2005, pg 781) such social constructs provide "the demand which drives the functioning of … *housing* submarkets".

As to the impact of medium density housing on such constructs and on local neighbourhoods, in general a range of views is apparent. In Australia a number of local government councils have been reluctant to approve higher densities as a result of presumed negative externalities such as the disappearance of green space, the loss of privacy, the increase in traffic (Searle, 2007) and the expected fall in housing values. Local neighbourhood groups protesting

under banners such as "Save our Suburbs" perceive higher urban densities to be the antithesis of suburban life threatening urban amenity, house values and quality of life (Searle, 2007; Quirk, 2008). Lewis (1999) has written of a suburban "back lash" against higher levels of housing density. Fincher and Gooden (2007) recognise that with the increase in medium density development there has been an associated increase in the intensity of the politics around it. Buxton and Tiemans (2005) suggest that medium density housing is objected to by local residents who see themselves as defending their neighbourhood character. In the UK Bramley et al (2007) acknowledges that the physical form of suburbs in terms of housing density can have a significant effect on house prices. However Bramley et al (2007) also concludes that redevelopment may in fact increase house prices through improved social and environmental outcomes especially if associated with an increase in the level of home ownership within a neighbourhood. Zielenbach (2003) suggests that in the US the mix of private dwellings and rehabilitated public housing may improve property values with positive ripple effects on surrounding areas.

Within Australia Yates (2001; 2006) has recognised that house prices may change as a result of higher density redevelopment which can give rise to an 'uneven' result in terms of housing affordability. As well concern has been expressed that the upgrading of local areas through the rehabilitation of public housing stock "can be ad hoc with disruptive impacts on local character and amenity" (Bunker et al 2005) and that such impacts require recognition. Forster (1991; 2006) too considers the potential of increasing urban density to increase social polarization as government processes of urban regeneration and economic forces cause house price appreciation and loss of affordability. Zielenbach (2003) recognises that in the US redevelopment and upgrading of neighbourhoods can cause controversy and effectively displace lower income residents. Within Australia the replacement of public housing stock with medium density redevelopment is often associated with substantial on selling and private market activity resulting in the displacement of original tenants and in considerable community disruption (AHIU 2008). This study will attempt to discover the level of such displacement and the extent to which communities change as a result of this form of housing redevelopment.

Measuring urban density

While there is considerable debate on the changes that can be expected from increasing urban densities there seems to be general agreement that urban densities are in fact rising. In terms of Australia overall there was an 11.1 percent increase in the stock of semi detached, row or terrace house or townhouse dwellings between 1996 and 2006 (ABS, 2006a) and a 16.6 percent increase in the number of flats units or apartments compared to only a 6.7 percent increase in the stock of detached dwellings (ABS, 2006a). At the same time the average block size for new homes within Australian cities have decreased from 802 to 735 square metres between 1994 and 2004 (HIA, 2008). As of 2006 median lot sizes in Adelaide and Perth were 450 and 540 square metres respectively (Figure 1) while for Melbourne and Sydney median lot sizes had dropped to about 570 square metres (HIA-RP Data, 2009).

Figure 1 Median Lot Sizes
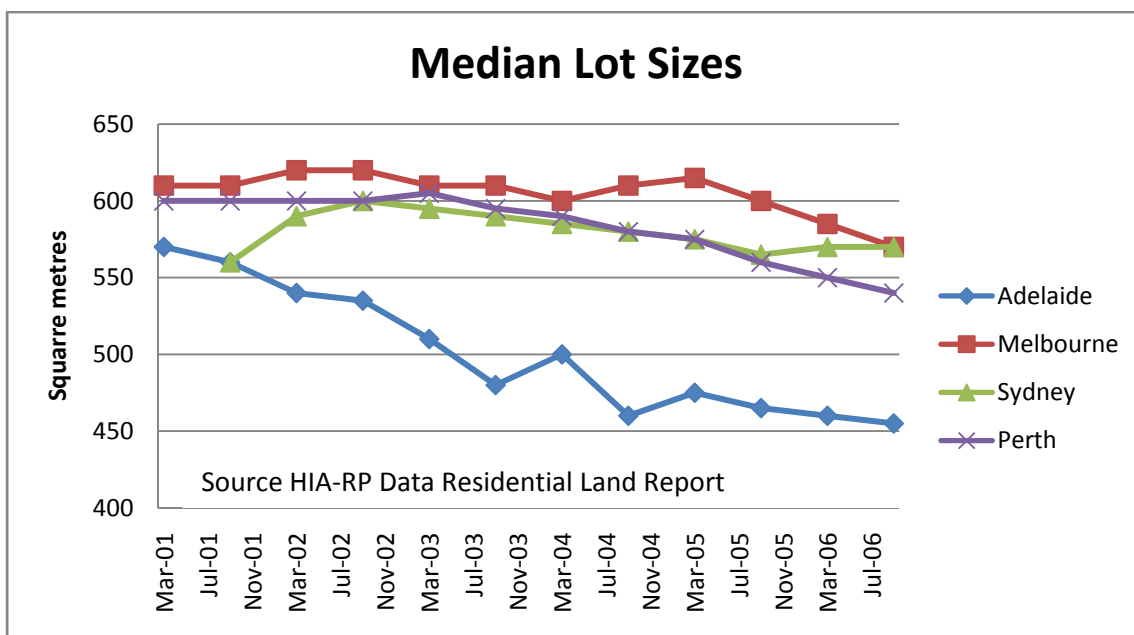
This drop in median lot sizes is associated with increasing densities of housing especially in cities such as Adelaide and Perth and much of this decrease in lot size is in turn attributed to rising land prices within Australian cities (HIA – RP Data, 2009). The median residential land price for all capital cities showed a significant increase between 2003 and 2006 from $110,000 in March 2003 to over $180,000 in November 2006, an annual increase of over 20 percent (Figure 2).

Figure 2 Median Residential Land Prices

Median Residential Land Prices - Capital Cities Australia

Source HIA-RP Data Residential Land Report
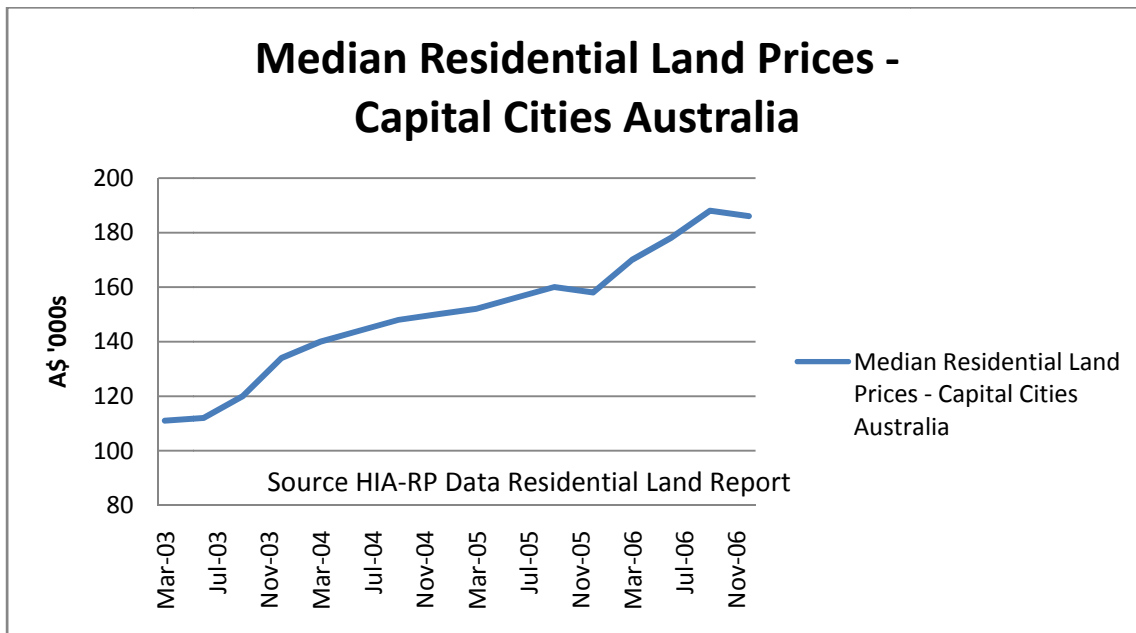
Rising land prices are in turn associated with falls in housing affordability (Figure 3) particularly for first time buyers as indicated by the HIA First Home Buyer Affordability Index (HIA, 2009).

Figure 3 HIA Affordability Index

HIA First Home Buyer Affordability Index Australia

Source HIA Economics Group Research Note

Drop in Affordability
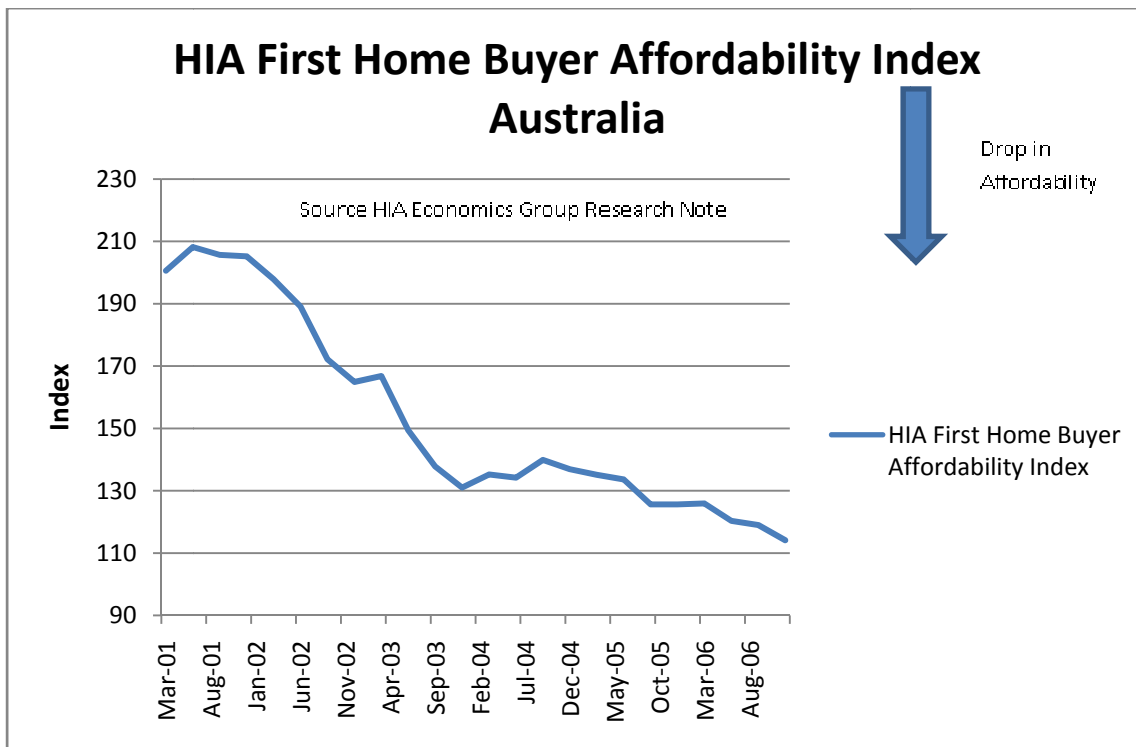
However for Australia as a whole and for cities such as Adelaide, Melbourne, Sydney and Perth the overall increase in the percentage of dwellings represented by medium and higher density development at aggregate level would appear to be marginal. In fact the construction of attached dwellings in Australia (includes blocks of flats, home units, attached townhouses, villa units, terrace houses, semidetached houses, maisonettes, duplexes and apartment buildings) as measured by commencements fell from 52000 in 2004 to 46000 in 2006 after reaching a peak of 59000 in 2002 (ABS, 2008) (
Figure **4**).

Figure 4 Attached dwelling commencements Australia 2001 & 2006
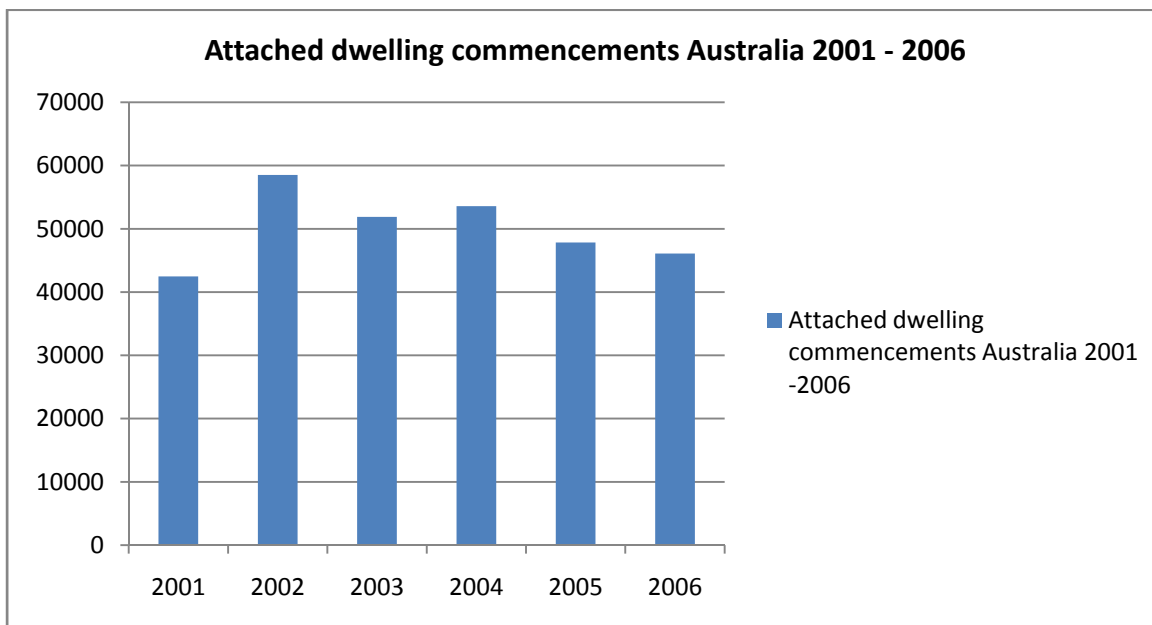
Source: ABS (2008) Dwelling Commencements & Approvals, 2001, 2006, Cat No. 8750.04, AGPS, Canberra.

As well building approvals for non detached dwellings as a percentage of all dwelling approvals (ABS, 2008) also show considerable fluctuation between 2001 and 2006 with only Sydney showing an overall upward trend (Figure 5).

Figure 5 Building Approvals Non –detached dwellings
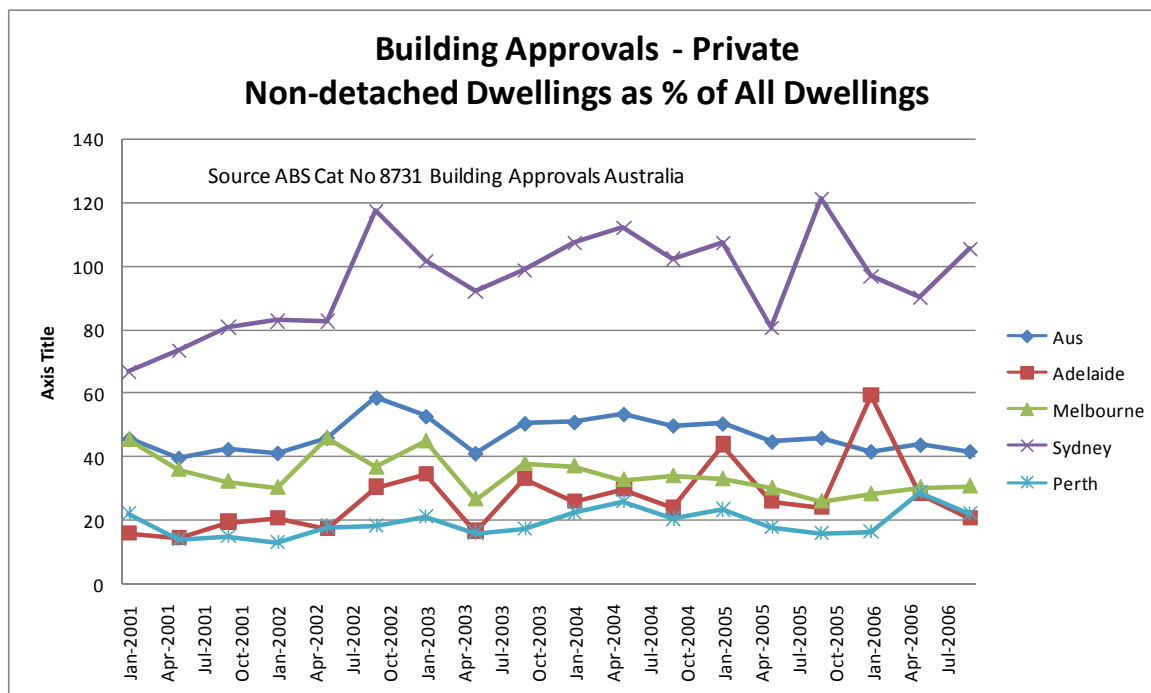
However Buxton and Tiemans (2005) have identified a significant increase in the number of higher density developments (four or more storey developments) for Melbourne since 1996. Three and four storey development has also increase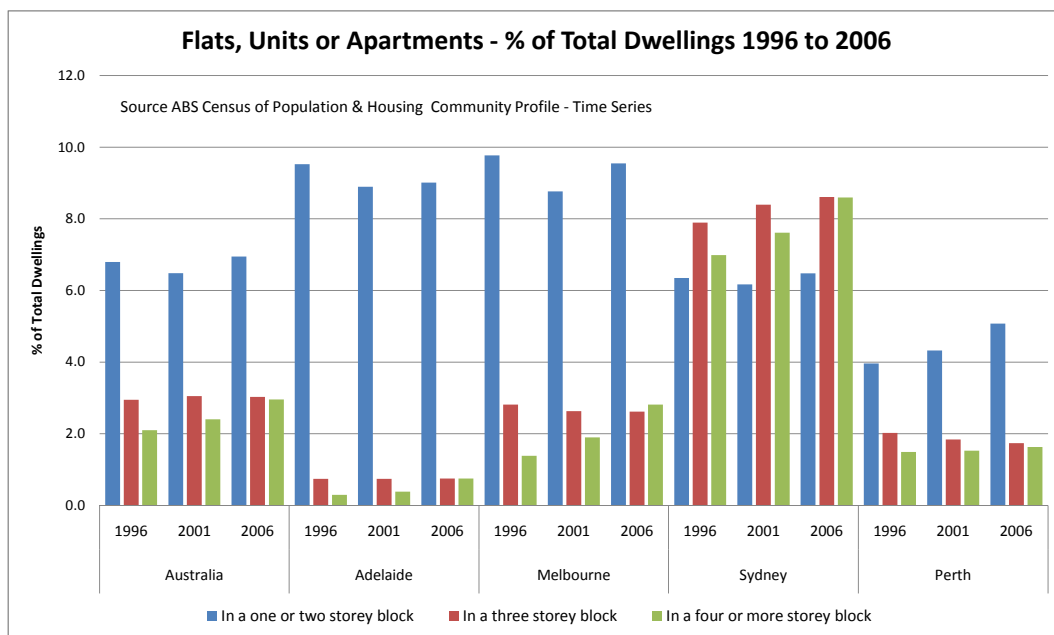d in Sydney between 1996 and 2006 (Figure 6) while in Perth medium density development (one or two storey block) has shown a considerable increase over the same time period (ABS 2006).

Figure 6 Flats Units or Apartments as % of Total Dwellings

Thus while at an aggregate level the magnitude of change associated with new medium density development may not appear significant the importance of disaggregation in terms of identifying change within the socio spatial landscape of Australian cities has been emphasized (Baum et al 1999; 2005). As such this paper seeks to make a contribution by considering the impact of medium density development at a disaggregated neighbourhood level. The metropolitan units of Adelaide, Melbourne, Sydney and Perth reviewed in this paper are defined by the Australian Bureau of Statistics (ABS, 2006a) as Statistical Divisions (SDs). These SDs can in turn be broken down into Statistical Local Areas (SLAs) which can be further disaggregated into one of the smallest spatial units recognised by the ABS the state suburb (SSC). This is the spatial level at which the outcomes of medium density development are considered in this paper with some 292 SSCs in Adelaide, 359 SSCs in Melbourne, 502 SSCs in Sydney and 313 SSCs in Perth being included in the analysis.

Method

For each city Australian Bureau of Statistics census data the ASD (ABS 2006a) was used to identify social constructs for 2001 and 2006 based on principal component analysis. Some 42 variables which were consistent in their measurement across the two census periods were taken from the ABS Basic Community Profile for every suburb within a Statistical Division. A number of these variables were based on those selected by the ABS in the construction of their Socio Economic Indexes for Areas (SEIFA). There are four SEIFA indexes (ABS 2006) which are used to track relative socioeconomic advantage and disadvantage, occupation and education and level of economic resources across statistical areas and are based on the ABS Census. However a number of other variables not included in the SEIFA indexes were used in this analysis in particular those pertaining to mobility, language, ethnicity and housing form. As well the number of variables used is rather more than those used in the SEIFA indexes which are based on a fairly narrow selection of variables, tend to be more particular to the census period in which they are

constructed and are not suitable for comparison across census periods (ABS 2006a). However the SEIFA indexes were used in the paper to investigate whether there were significant differences within a census period between those suburbs which had experienced higher levels of flat and unit development and those that had not. Residential median price data for each suburb for detached dwellings and units for 2001 and 2006 (RP Data) was used to identify the impact, if any, of change in neighbourhood structure and dwelling type on housing market performance.

For each city principal components analysis (PCA) was carried out using percentage values for the 42 variables for each city to identify the core components or factors that cumulatively help to explain the housing and social fabric of each suburb for 2001 and 2006. KMO and Bartlett tests indicated that all the data sets were suitable for this type for analysis (Table 4). Based on the criteria of eigen values greater than 1, factors were produced for each city for the 2001 and 2006 census. The minimum cumulative percent of variance achieved was 67.6 percent for the 2006 Adelaide results which were considered adequate for the purposes of the analysis (Hair et al 1998) (Table 1; Table 5).

Table 1 2001 Factor Labels & Cumulative Variance

2001 Factor Labels & Cumulative % Variance Explained							
Adelaide	Cumulative %	**Melbourne**	Cumulative %	**Sydney**	Cumulative %	**Perth**	Cumulative %
Socio economic	20.875	Familism	21.299	Familism	20.941	Familism & Detached dwellings	19.436
Familism	34.498	Socio economic	40.863	Socio economic	38.081	Socio economic	37.689
Mobility	45.137	Mobility	53.518	Mobility	53.309	Ethnicity	48.24
Ethnicity	54.988	Ethnicity	65.712	Ethnicity	64.744	Mobility	58.667
Medium Density	62.957	Housing Authority	72.706	Housing Authority	73.925	Housing Authority	65.2
High Density	70.402	6	78.553	Higher Density	78.223	Higher Density	70.774
7	74.946	7	82.417	7	82.081	7	75.405
8	78.893			8	84.953	8	79.86
2006 Factor Labels & Cumulative % Variance Explained							
Adelaide	Cumulative %	**Melbourne**	Cumulative %	**Sydney**	Cumulative %	**Perth**	Cumulative %
Socioeconomic	20.488	Familism	21.334	Higher Density	26.874	Familism & Detached Dwellings	18.148
Mobility	31.993	Socioeconomic	42.376	Socioeconomic	47.291	Socioeconomic	33.607
Ethnicity	42.91	Mobility	57.446	Ethnicity	59.011	Mobility	44.805
Family structure	53.017	Ethnicity	71.143	Familism	68.81	Aged	55.975
Tenure	60.538	Housing Authority	76.328	Clerical & Sales Workers	76.561	Ethnicity	66.348
Medium Density	67.602	6	80.321	6	80.278	Housing Authority	72.006
7	71.522	7	84.185	7	83.97	7	77.174
8	75.373	8	87.605			8	81.167
9	79.112					9	84.535

From these rotations factors were identified for each data set (Table 1; Table 6) based on the interpretation of those variables with factor loadings greater than .5 (Table 6). For each city factor labels included Socioeconomic (based on the inclusion of variables representing items such as income, qualifications and occupation); Familism (based on variables representing such items as age and family structure); Mobility (based on variables covering dwelling

change or stability in last one to five years); Ethnicity (based on language and place of birth); Housing Authority (based on selection of housing form and housing authority dwellings) and finally Medium or High/er Density (representing higher density forms of housing development). For each city there were factors that were not able to be summarized adequately. The positive and negative ends of each factor were interpreted. Finally factor scores which measured the scale of each construct within a suburb were then calculated and mapped to confirm the spatial distribution of the social structure for each city in 2001 and 2006 (*Only Adelaide included at this time* Figure 7, Figure 8, Figure 9, Figure 10).

Next for each city those suburbs which had experienced higher levels of unit and flat development between 2001 and 2006 were identified. No distinction was able to be made between medium density housing that had been supplied through government channels or as a result of market demand. Development was measured as the percent change at suburb level in the number of one and two storey flats, units and apartments between 2001 and 2006. This was the only variable representing medium density housing form that was consistent across the two census periods. Those suburbs which had experienced at least a 50 percent change in their volume of medium density development were selected for further analysis and for each city this represented the top quintile of suburbs (Table 2). For each city these suburbs were then compared to the rest of the statistical division within each census period using a simple independent samples t test analysis of means for a number of items with the Levene's Test for Equality of Variances applied (SPSS, 1993) (Table 7). The items that were used to test for difference between the two groups included variables for dwelling type, the factors representing neighbourhood social structure identified by the PCA, the SEIFA indexes, and finally median price and median price change for detached dwellings and for units.

Table 2 Change in 1 or 2 storey flats & units as percent of total dwellings 2001 & 2006

Change in 1 or 2 storey flats & units as percent of total dwellings 2001 & 2006 (Source ABS Census of Population & Housing)		> 50% Increase	1 to 49% Increase	Decrease	Invalid or missing data	Total Suburbs
Adelaide	Number of suburbs	62	116	114		292
	% of suburbs	21.2	39.7	39.0		100
Melbourne	Number of suburbs	80	125	83	71	359
	% of suburbs	22.3	34.8	23.1	19.8	100.0
Sydney	Number of suburbs	100	115	153	134	502
	% of suburbs	19.9	22.9	30.5	26.7	100.0
Perth	Number of suburbs	79	32	62	140	313
	% of suburbs	25.2	10.2	19.8	44.7	100.0

Results

The results are discussed in terms of whether those suburbs with new development could be distinguished either in 2001 or 2006 from suburbs which had not experienced the higher level of development. The discussion focuses on changes to housing stock, changes in social structure as measured by the PCA and market performance as measured by median price for detached dwellings and for units.

Housing stock
The independent samples t test identifies that for each city suburbs which went on to experience large increases in medium density development in 2006 (> than 50 %) could be distinguished in 2001 by significantly lower volumes of one or two storey development (Sig>.05); for Adelaide 5.09% compared to 12.31% for the rest of the statistical division; Melbourne 3.5 % compared to 10.2% for the rest of the city; Sydney 3.7% compared to 6.7% for all other suburbs and for Perth 2.8% compared to 5.72%. Sydney suburbs could also be distinguished in 2001 by lower levels of high density development as indicated by the Higher Density Factor. These pre existing lower levels of medium density development are likely to offer the potential for investment in terms of redevelopment and infill housing.

By 2006 suburbs in Adelaide which originally had lower volumes of medium density development could no longer be distinguished in this way. In other words they had achieved a stock of medium density development comparable to the rest of the city giving rise it would be surmised, to substantial change in their built form within a relatively short period. In Melbourne in 2006 these suburbs still retained a lower volume of medium density development than the rest of the city, 7.8% compared to 10.6% though with a lower percentage difference than in 2001. However in both Sydney and Perth by 2006 those suburbs which previously had lower levels of medium density development could now distinguished by higher levels of one or two storey units or flats than the rest of the metropolitan area (Sydney 7.9% compared to 5.9% and Perth 7% compared to 4.9%). Again the conclusion is that these suburbs have changed significantly in their built form in quite a short period of time.

Social structure
In terms of social structure as measured by factor scores, the suburbs in Adelaide which experienced greatest change in medium density development could be distinguished in 2001 by lower levels of Ethnicity that is higher levels of Australian born and English only speaking households and by lower levels of Mobility that is more households who had remained at the same address in the last five years. However these suburbs could not be distinguished from the rest of the city by scores on Socioeconomic or Familism Factors or by SEIFA scores.   In Melbourne the suburbs when measured by factors scores could again be distinguished by lower levels of Ethnicity but also by higher levels of Familism that is more couples with children, and by lower levels of socioeconomic status. However they could not be distinguished by any of the SEIFA scores. In Sydney in 2001 the suburbs which later experienced high levels of medium density development could not be distinguished at all by their social makeup. The greatest distinction in terms of social structure is indicated by Perth where suburbs which later exhibited the greatest increase in medium density development showed in 2001 significantly lower levels of socioeconomic status as well as lower SEIFA scores for education, employment opportunity and economic advantage.

By 2006 the suburbs in Adelaide they could be distinguished from the rest of the city by lower levels of socioeconomic status (Sig >.05) as measured by factor scores and in terms of a lower score on the SEIFA index of Education and Occupation, which measures education levels and job skills (977 compared to 1014 for the rest of the ASD). This would appear to indicate some change in neighbourhood character as suggested by Buxton and Tiemans (2005) but not the marked displacement of lower income residents as discussed by Zielenbach (2003). The suburbs could still be distinguished significantly (Sig >.05) by a lower Ethnicity score indicating that they had retained a higher than average level of Australian born and English only speaking household However there was still no distinction in terms of family structure and they could no longer be distinguished by lower levels of mobility. This represents a relatively stable, lower to middle income, Australian born neighbourhood. In Melbourne by 2006 the suburbs which had experienced greatest change in medium density development had retained their higher level of Familism that is couples with children and of Australian born households. Their lower level of socioeconomic status had also been retained and in 2006 this is reinforced a by a lower SEIFA Education and Occupation score. Essentially the social structure of these Melbourne suburbs seems to show little change despite a significant change in their built form. Again in 2006 suburbs in Sydney cannot be distinguished in any way by their social structure which may be indicative of the much larger volume of medium and especially high density development in Sydney which is occupied and purchased by a broad spectrum of income levels. In Perth suburbs which by 2006 had experienced large increases in medium density development continued to show lower levels of socioeconomic status as well as lower SEIFA scores for education, occupation and economic advantage. Again while these suburbs have changed their built form in a major way the social structure of their neighbourhoods does not seem to have changed at all.

Dwelling price & % price change
In 2001 in Adelaide there was no distinction across suburbs in terms of the median price paid for all dwellings, detached dwellings or units. In other words at this time residential property was not selling at a significantly different price in the suburbs that went on to be developed between 2001 and 2006. However in Melbourne, Sydney and Perth the median price of detached dwellings in 2001 was significantly lower in those suburbs which went on the experience high levels of medium density development in 2006. Again pre existing low price levels for detached dwellings and especially their associated land parcels are likely to offer the potential for investment in terms of redevelopment and medium density housing.

In Adelaide by 2006 there was a distinction in the median price being paid for detached dwellings (Sig >.05) which was lower than that for the rest of the city, $302590 compared to $327973. However there was no difference in the median prices paid for units or for all dwellings overall. In Melbourne by 2006 these suburbs still retained a lower median price for detached dwellings but in contrast showed a significantly higher median price for units ($310,588 compared to $291,319 for the rest of the city). Again in Sydney in 2006 these suburbs showed no distinction in terms of dwelling prices. However Perth was similar to Adelaide and Melbourne in that by 2006 these suburbs also showed a lower median price for detached dwellings. It would appear that more affordable housing is being retained in these suburbs in the form of detached dwellings which is important for neighbourhoods where overall household incomes are lower and for Melbourne in particular where there are more family households.

Between 2001 and 2006 for Adelaide there was no distinction in terms of the percentage increase in median price for detached dwellings or units between the suburbs who had experienced higher levels of medium density development and those which had not. In other words property prices did not appear to have been negatively impacted by the increased density of development. In fact in Melbourne suburbs with higher levels of medium density development showed a significantly larger price increase for units than for the rest of the city (41.1% compared to 26.7%). In Sydney and in Perth there were higher price increases for detached dwellings (53.8% compared to 32.2% and 171% compared to 155%) so again dwellings prices in these suburbs do not seem to have suffered from the increase in medium density development. Thus while detached property prices were lower overall, unit prices were not and in terms of the change in capital values there was no drop in either category. Thus investment returns between 2001 and 2006 do not appear to have been significantly compromised in areas which have experience higher levels of medium density development. This is good news for those who have entered into home ownership and for residential investors seeking capital gain on their properties and may go some way towards alleviating the fears of those groups identified by Searle (2007) and Quirk (2008).

Conclusion

In conclusion the factors which encourage medium density development to take place would appear consistent across all four cities. Pre existing lower levels of medium density housing and lower price levels for detached dwellings at suburb level appear to foster this type of development. The impact of this development on suburbs in terms of their built form and physical appearance is also likely to be significant for every city. However in terms of social structure it seems to have had minimal impact with most suburbs in Adelaide, Melbourne and Perth retaining a lower level of socioeconomic status, lower levels of mobility, higher levels of family makeup and higher concentrations of Australian born before and after development. These neighbourhoods may reflect a more stable population with home ownership aspirations. Sydney remains apart in that suburbs were not able to be distinguished by social structure either before or after development.

In terms of price dwellings, both detached and units show the same level of price increase within suburbs which have seen major redevelopment as those which had not. Overall in every city it would appear that these neighbourhoods which have experienced significant change in their built form are not experiencing any significant difference in terms of housing market performance and in fact for certain dwellings may be outperforming the rest of the city. As such there may be no winners or losers in terms of housing investment. Those who worry that medium density infill may dampen house prices significantly may have less to fear than they expect while those who are concerned that redevelopment signals the end of affordable housing may still find that that housing opportunities remain for those on lower incomes. However it would also appear that increasing medium densities and improving tenure mix may not necessarily improve the opportunities for socio economic mix or for cultural diversity.

In terms of further research the impact of medium density development could also be examined using individual transaction data with accommodation made for the constant quality issue which may arise from combining older and more recently constructed dwellings in the analysis. It would be further supported by qualitative work which engaged local communities and households in a review of their experiences of neighbourhood change and explored their aspirations for the suburb.

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Table 3 ABS Basic Community Profile Items

	FACTOR VARIABLES
V1	People_aged_15_and_over
V2	People_aged_64_and_over
V3	People_aged_0_4
V4	People_aged_5_9
V5	People_Speak_other_language_at_home
V6	People_only_up_to_Year_8_Schooling
V7	People_Australian_Born
V8	People_Speak_English_Only
V9	People_Speak_other_language
V10	People_Uni_or_Tertiary_Qual
V11	People_Income_$1_$39_per_week
V12	People_Income_$40_$79_per_week
V13	People_Income_$80_$119_per_week
V14	People_Income_$1500_or_more_per_week
V15	People_Income_$1000_$1499_per_week
V16	People_in_Group_Household
V17	People_Lone_Person_Household
V18	Families_Couple_No_Child
V19	Families_Couple_plus_Child_under_15
V20	Families_One_parent_family
V21	Dwellings_Separate_Houses
V22	Dwellings__1_STOREY_Semi_Row_Terrace_Townhouse
V23	Dwellings__2_or_more_STOREY_Semi_Row_Terrace_Townhouse
V24	Dwellings_1_or_2_STOREY_Flats_Units_and_Appts
V25	Dwellings_3_STOREY_Flats_Units_and_Appts
V26	Dwellings_4_or_more_STOREY_Flats_Units_and_Appts
V27	Dwellings_Fully_Owned
V28	Dwellings_Being_Purchased
V29	DwellingsRentedHousing_Authority
V30	Dwellings_Monthly_Loan_Payment_$2000_and_over
V31	Dwellings_Monthly_Loan_Payment_$1600_$1799
V32	Dwellings_RentedOTHER
V33	People__Same_usual_address_1_years_ago
V34	People__Lived_at_different_address_1_years_ago
V35	People__Same_usual_address_5_years_ago
V36	People__Lived_at_different_address_5_years_ago
V37	People__Postgrad_Degree
V38	People__Bachelor_Degree
V39	Workers__Managers_and_Administrators
V40	Workers__Professionals_and_Associate_Professionals
V41	Workers__Laborers
V42	Workers__Elementary_Clerical_Sales_and_Service_Workers

Table 4 KMO Test 2001 & 2006

Adelaide 2001

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.757
Bartlett's Test of Sphericity	Approx. Chi-Square	24859.254
	df	861
	Sig.	.000

Adelaide 2006

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.729
Bartlett's Test of Sphericity	Approx. Chi-Square	26068.150
	df	1035
	Sig.	.000

Melbourne 2001

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.807
Bartlett's Test of Sphericity	Approx. Chi-Square	26423.544
	df	741
	Sig.	.000

Melbourne 2006

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.767
Bartlett's Test of Sphericity	Approx. Chi-Square	37206.745
	df	946
	Sig.	.000

Sydney 2001

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.804
Bartlett's Test of Sphericity	Approx. Chi-Square	43051.316
	df	780
	Sig.	.000

Sydney 2006

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.797
Bartlett's Test of Sphericity	Approx. Chi-Square	56126.100
	df	946
	Sig.	.000

Perth 2001

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.750
Bartlett's Test of Sphericity	Approx. Chi-Square	18185.662
	df	741
	Sig.	.000

Perth 2006

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.742
Bartlett's Test of Sphericity	Approx. Chi-Square	21565.124
	df	861
	Sig.	.000

Table 5 Total Variance Explained

Adelaide Total Variance Explained 2006

Total Variance Explained			
	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
Socioeconomic	9.424	20.488	20.488
Mobility	5.293	11.506	31.993
Ethnicity	5.022	10.917	42.91
Familism	4.649	10.107	53.017
Tenure	3.46	7.521	60.538
Medium Density	3.249	7.064	67.602
7	1.803	3.92	71.522
8	1.772	3.851	75.373
9	1.72	3.739	79.112
Extraction Method: Principal Component Analysis.			

Melbourne Total Variance Explained 2006

Total Variance Explained			
	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
Familism	9.387	21.334	21.334
Socioeconomic	9.258	21.042	42.376
Mobility	6.631	15.070	57.446
Ethnicity	6.027	13.697	71.143
Housing Authority	2.282	5.185	76.328
6	1.757	3.993	80.321
7	1.700	3.864	84.185
8	1.505	3.420	87.605
Extraction Method: Principal Component Analysis.			

Sydney Total Variance Explained 2006

Total Variance Explained			
	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
Higher Density	11.825	26.874	26.874
Socioeconomic	8.983	20.417	47.291
Ethnicity	5.157	11.720	59.011
Familism	4.311	9.799	68.810
Clerical & Sales Workers	3.410	7.751	76.561
6	1.635	3.717	80.278
7	1.625	3.693	83.970
Extraction Method: Principal Component Analysis.			

Perth Total Variance Explained 2006

Total Variance Explained			
	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
Familism & Detached Dwellings	7.622	18.148	18.148
Socioeconomic	6.493	15.459	33.607
Mobility	4.703	11.198	44.805
Aged	4.691	11.170	55.975
Ethnicity	4.357	10.373	66.348
Housing Authority	2.376	5.658	72.006
7	2.171	5.169	77.174
8	1.677	3.993	81.167
9	1.414	3.367	84.535
Extraction Method: Principal Component Analysis.			

Adelaide Total Variance Explained 2001

Total Variance Explained			
Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
Socioeconomic	8.767	20.875	20.875
Familism	5.722	13.623	34.498
Mobility	4.468	10.639	45.137
Ethnicity	4.137	9.851	54.988
Medium Density	3.347	7.97	62.957
High Density	3.127	7.445	70.402
7	1.909	4.544	74.946
8	1.658	3.947	78.893
Extraction Method: Principal Component Analysis.			

Melbourne 2001 Total Variance Explained			
	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
Familism	8.307	21.299	21.299
Socioeconomic	7.630	19.564	40.863
Mobility	4.936	12.655	53.518
Ethnicity	4.755	12.194	65.712
Housing Authority	2.728	6.994	72.706
6	2.281	5.848	78.553
7	1.507	3.863	82.417
Extraction Method: Principal Component Analysis.			

Sydney 2001 Total Variance Explained			
	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
Familism	8.376	20.941	20.941
Socioeconomic	6.856	17.140	38.081
Mobility	6.091	15.228	53.309
Ethnicity	4.574	11.435	64.744
Housing Authority	3.672	9.181	73.925
Higher Density	1.719	4.298	78.223
7	1.543	3.858	82.081
8	1.149	2.873	84.953
Extraction Method: Principal Component Analysis.			

Perth 2001 Total Variance Explained			
	Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %
Familism & Detached dwellings	7.580	19.436	19.436
Socioeconomic	7.119	18.253	37.689
Ethnicity	4.115	10.551	48.240
Mobility	4.067	10.427	58.667
Housing Authority	2.548	6.533	65.200
Higher Density	2.174	5.575	70.774
7	1.806	4.631	75.405
8	1.738	4.455	79.860
Extraction Method: Principal Component Analysis.			

Table 6 Rotated Component Matrixes

Adelaide Rotated Component Matrix(a)

Component Labels based on factor loadings >.5	Socio economic	Mobility	Ethnicity	Familism	Medium Density Housing Authority	Medium to Higher Density Other	7 (not labelled)	8 (not labelled)	9 (not labelled)
Workers_Professionals	0.924								
People_Bachelor_Degree	0.918								
People_Postgrad_Degree	0.915								
People_Income_1600_1999	0.887								
Dwellings_Monthly_Loan_Payment_2000_2999	0.869								
People_Income_2000_or_more	0.867								
Workers_Laborers	-0.861								
Dwellings_Monthly_Loan_Payment_3000_and_over	0.749								
People_Income_150_249	-0.729								
People_Uni_or_Tertiary_Qual	0.678								
Workers_Managers	0.672								
Families_One_parent_family	-0.634				0.613				
People_Income_250_399	-0.579								
People_Same_usual_address_5_years_ago		0.848							
People_Lived_at_different_address_1_years_ago		-0.841							
People_Same_usual_address_1_years_ago		0.765							
People_Lived_at_different_address_5_years_ago		-0.741							
Families_Couple_plus_No_Child_under_15		0.715							
Dwellings_Rented_Real_Estate_Agent		-0.562				0.519			
People_Lone_Person_Household		-0.521							
Dwellings_Fully_Owned		0.519							
People_Speak_other_language			0.971						
People_Speak_other_language_at_home			0.970						
People_Speak_English_Only			-0.956						
People_Born_elsewhere			0.832						
People_Australian_Born			-0.819						
Families_Couple_No_Child				0.810					
People_aged_70_74				0.798					
People_aged_65_69				0.755					
Families_Couple_plus_Child_under_15				-0.753					
People_aged_5_9				-0.614					
People_aged_75_79				0.575					
Dwellings_Being_Purchased				-0.552					
Dwellings_1_Storey_Semi_Row_Terrace_Townhouse					0.721				
Dwellings_Rented_Housing_Authority					0.696				
Dwellings_Separate_Houses					-0.587				

Dwellings_3_Storey_Flats_Units_and_Appts						0.693			
Dwellings_4_or_more_Storey_Flats_Units_and_Appts						0.652			
People_in_Group_Household						0.636			
Dwellings__2_or_more_Storey_Semi_Row_Terrace_Townhouse						0.633			
People_aged_0_4_years							0.834		
People_only_up_to_Year_8_Schooling							0.695		
People_Income_1_149								-0.726	
Workers_Clerical_and_administrative									0.648
Workers_Sales_workers									0.588
Dwellings_1_or_2_Storey_Flats_Units_and_Appts									
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.									
a	Rotation converged in 10 iterations.								

Melbourne Rotated Component Matrix 2006

	Component							
	Familism	Socioeconomic Status	Mobility	Ethnicity	Housing Authority	6 (not labelled)	7 (not labelled)	8 (not labelled)
% Families Couple plus Child under 15	-.933							
People aged 65 years and over	-.925							
People aged 15 years and over	.895							
% People aged 0-4	-.835							
% Dwellings Being Purchased	-.827							
% Families Couple No Child	.813							
% People Lone Person Household	.757							
% Dwellings - Rented - Other	.671							
% People in Group Household	.652							
% Dwellings -Rented-Real Estate Agent	.632		.543					
% Dwellings Separate Houses	-.580							
% People Uni or Tertiary Qual	.551	.511						
% Dwellings 4 or more STOREY Flats, Units and Appts	.504							
% Dwellings 3 STOREY Flats, Units and Appts								
% People Income 2000 or more		.882						
% People Income 1600-1999		.881						
Workers_Professionals		.858						
Workers_Clerical_and_administrative		.830						
Workers_Laborers		-.827						

% Dwellings Monthly Loan Payment 3000 and over	.812						
% Dwellings Monthly Loan Payment 2000-2999	.808						
Workers_Sales_workers	.801						
Workers_Managers	.740						
% Families One parent family	-.731						
% People Income 150-249	-.696						
% People Income 250-399	-.675						
People_Same_usual_address_5_years_ago		-.957					
People_Lived_at_different_address_5_year_ago		.930					
% Dwellings Fully Own		-.856					
People_Lived_at_different_address_1_year_ago		.851					
% People - Same usual address 1 years ago		-.802					
% People Income 1-149		-.512					
% People Speak other language at home			.978				
% People Speak other language			.978				
% People Speak English Only			-.969				
% People Born elsewhere			.942				
% People Australian Born			-.899				
% People only up to Year 8 Schooling	-.563		.571				
% Dwellings - 1 STOREY Semi, Row, Terrace, Townhouse				.711			
% Dwellings-Rented-Housing Authority				.686			
% Dwellings - 2 or more STOREY Semi, Row, Terrace, Townhouse				.568			
% People aged 5-9					-.659		
% Dwellings 1 or 2 STOREY Flats, Units and Appts 2006						.838	
Workers_Clerical_Admin_Sales							-.762
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.							
a. Rotation converged in 8 iterations.							

Sydney Rotated Component Matrix 2006							
	Component						
	Higher Density	Socioeconomic Status	Ethnicity	Familism	Clerical & Sales Workers	6 (not labelled)	7 (not labelled)
People_Same_usual_address_5_years_ago	-.920						
% People - Same usual address 1 years ago	-.911						
% Dwellings -Rented-Real Estate Agent	.909						
People_Lived_at_different_address_1_year_ago	.890						
% Dwellings Separate Houses	-.853						
People_Lived_at_different_address_5_year_ago	.837						
% Dwellings 4 or more STOREY Flats, Units and Appts	.794						
% People in Group Household	.793						
% People Lone Person Household	.751						
% Dwellings Fully Own	-.719						
% Dwellings - Rented - Other	.710						
% People Income 1-149	-.708						
% Families Couple No Child	.702						
% People aged 5-9	-.651			-.603			
% Dwellings 3 STOREY Flats, Units and Appts	.612					.504	
% Families One parent family		-.920					
Workers_Laborers		-.875					
% People Income 150-249		-.854					
% People Income 1600-1999		.835					
Workers_Managers		.830					
Workers_Professionals		.799					
% People Income 2000 or more		.768					
% Dwellings Monthly Loan Payment 3000 and over		.765					
% Dwellings-Rented-Housing Authority		-.722					
% People only up to Year 8 Schooling		-.709					
% People Income 250-399		-.707					
% People Uni or Tertiary Qual		.568					
% People Speak other language			.935				
% People Speak other language at home			.935				
% People Born elsewhere			.934				
% People Speak English Only			-.915				

	1	2	3	4	5	6	7	8	9
% People Australian Born				-.820					
% People aged 0-4					-.808				
% Families Couple plus Child under 15		-.561			-.733				
People aged 65 years and over					.669			.506	
People aged 15 years and over		.626			.662				
% Dwellings Being Purchased					-.653				
Workers_Clerical_Admin_Sales						.868			
Workers_Clerical_and_administrative						.806			
Workers_Sales_workers						.607			
% Dwellings Monthly Loan Payment 2000-2999						.517			
% Dwellings 1 or 2 STOREY Flats, Units and Appts 2006								.717	
% Dwellings - 1 STOREY Semi, Row, Terrace, Townhouse									.742
% Dwellings - 2 or more STOREY Semi, Row, Terrace, Townhouse									.700

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 23 iterations.

Perth Rotated Component Matrix 2006

	Component								
	Familism & Detached Dwellings	Socioeconomic Status	Mobility	Aged	Ethnicity	Housing Authority	7 (not labelled)	8 (not labelled)	9 (not labelled)
% Dwellings -Rented-Real Estate Agent	.804								
% Dwellings Separate Houses	-.796								
% Dwellings 3 STOREY Flats, Units and Appts	.795								
% People Lone Person Household	.765								
% Dwellings 4 or more STOREY Flats, Units and Appts	.765								
% Dwellings - 2 or more STOREY Semi, Row, Terrace, Townhouse	.738								
People aged 15 and over	.651								
% Families Couple plus Child under 15	-.614			-.603					
% Dwellings rented other	.611								
% People aged 5-9	-.607								
% Dwellings 1 or 2 STOREY Flats, Units and Appts									

	1	2	3	4	5	6	7	8	9
% People Income 2000 or more		.932							
% Dwellings Monthly Loan Payment 3000 and over		.859							
Workers_Laborers		-.821							
% Workers - Professionals		.816							
% Workers - Managers		.781							
% Dwellings Monthly Loan Payment 2000-2999		.780							
% People Income 1600-1999		.707							
% People - Same usual address 5 years ago			-.945						
% People - Lived at different address 5 years ago			.937						
% People - Lived at different address 1 years ago			.934						
% People - Same usual address 1 years ago			-.862						
% Dwellings Fully Own			-.589	.537					
People aged 65 and over				.902					
% People Income 250-399				.687					
% Dwellings Being Purchased	-.517			-.685					
% People Income 150-249		-.623		.630					
% Families Couple No Child	.601			.622					
% People only up to Year 8 Schooling				.550					
% People aged 0-4									
% People Speak other language at home					.947				
% People Speak other language					.946				
% People Speak English Only					-.880				
% People Born elsewhere					.688			.570	
% People Australian Born					-.683				
% Dwellings-Rented-Housing Authority						.706			
% Families One parent family		-.555				.690			
% People Uni or Tertiary Qual							.784		
% People in Group Household	.596						.615		
% People Income 1-149								.571	
Workers_Clerical_Sales								.531	.521
% Dwellings - 1 STOREY Semi, Row, Terrace, Townhouse									.747

Extraction Method: Principal Component Analysis.								
Rotation Method: Varimax with Kaiser Normalization.								
a. Rotation converged in 12 iterations.								

Adelaide 2001 Rotated Component Matrix(a)

	Component							
Component Labels based on factor loadings >.5	Socio - economic	Familism	Mobility	Ethnicity	Medium Density Housing Authority	Medium to Higher Density - Other	7 (Not labelled)	8 (Not labelled)
People__Postgrad_Degree	0.939097							
People__Bachelor_Degree	0.928519							
People_Income_1500_or_more	0.921703							
People_Income_1000_1499	0.869109							
Workers__Professionals_and_Associate_Professionals	0.844393							
Dwellings_Monthly_Loan_Payment_2000_and_over	0.829091							
Workers__Laborers	-0.72527							
People_Uni_or_Tertiary_Qual	0.702474							
Dwellings_Monthly_Loan_Payment_16001799	0.701722							
Workers__Managers_and_Administrators	0.673607							
People_Income_1_39	-0.52525							
Workers__Elementary_Clerical_Sales_and_Service_Workers	-0.51643							
People_aged_64_and_over		0.844793						
People_aged_5_9		-0.772037						
Families_Couple_No_Child		0.752098						
People_aged_0_4		-0.71581						
People__Lone_Person_Household		0.709347						
Dwellings_Being_Purchased		-0.657393						
People_aged_15_and_over		0.633596					0.62523	
Families_Couple_plus_Child_under_15		-0.587452						
Dwellings_Separate_Houses		-0.556256						
Dwellings_1_or_2_STOREY_Flats_Units_and_Appts								
People__Same_usual_address_5_years_ago			-0.892975					
People__Lived_at_different_address_1_years_ago			0.868375					
People__Lived_at_different_address_5_years_ago			0.860743					
People__Same_usual_address_1_years_ago			-0.756927					
Dwellings_Fully_Own			-0.600275					
Dwellings_Rented_OTHER								
People_Speak_other_language_at_home				0.970444				
People_Speak_other_language				0.969624				
People_Speak_English_Only				-0.927052				
People_Australian_Born				-0.663841			0.56981	
People_only_up_to_Year_8_Schooling	-0.51149			0.583141				
Dwellings__1_STOREY_Semi_Row_Terrace_Townhouse					0.849341			

	Familism	Socioeconomic	Mobility	Ethnicity	Housing Authority	6	7
Dwellings_Rented_Housing_Authority					0.844531		
Families_One_parent_family	-0.56255				0.718017		
People__in_Group_Household					0.656058		
Dwellings_4_or_more_STOREY_Flats_Units_and_Appts					0.655368		
Dwellings__2_or_more_STOREY_Semi_Row_Terrace_Townhouse					0.642107		
Dwellings_3_STOREY_Flats_Units_and_Appts					0.604206		
People_Income_80_119							0.7467
People_Income_40_79							0.5583

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a	Rotation converged in 8 iterations.

Melbourne 2001 Rotated Component Matrix[a]

	Component						
	Familism	Socioeconomic	Mobility	Ethnicity	Housing Authority	6	7
% Families Couple with children	-.893						
% People 15 years and over	.887						
% People in Lone person household	.867						
% People 5-9 years	-.851						
% Families Couple family w/o children	.848						
% People 0-4 years	-.778						
% People 65 years and over	.759						
% Dwellings Separate House	-.737						
% People Income $40 - $79	-.730						
% People Income $80 - $119	-.573						
% People in Group household	.503						
% People Income $1 - $39							
% Dwellings Flat unit or apartment: in a three storey block							
% People Income $1,500 or more		.889					
% People Income $1,000 - $1,499		.835					
% Monthly Loan repayment $2000+		.829					
Persons: Managers and Administrators,Total		.818					
% Monthly Loan repayment $1600-1799		.810					
Persons: Professionals,Total		.804					
Persons_Labourers_and_Related_Workers_Total		-.775					
Persons_Clerical_Sales_Total		-.690					
% Dwellings Semi detached: two or more storeys							
% People Same address 5 years ago			-.957				

	Familism	Socioeconomic	Mobility	Ethnicity	Housing Authority	Higher Density	7	8
% People Different address 5 years ago			.935					
% People Different address 1 year ago			.898					
% People Same address 1 year ago			-.843					
% People Speak English only				-.973				
% People Speaks other Language				.966				
% People Speak other language				.965				
% People born in Australia				-.885				
% People highest school Year 8 or below		-.563		.564				
% Dwellings Rented Total,Other					-.813			
% Dwellings Rented Total, Real estate agent					.672	-.630		
% People Bachelor Degree					.572			
% Dwellings Flat unit or apartment: in a one or two storey block					.501			
% Dwellings Semi detached: one storey								
% Dwellings Rented Total, State/Territory Housing Authority							.877	
% Families One parent Family		-.527					.672	
% Dwellings Flat unit or apartment: in a four or more storey block								-.733

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

Sydney 2001 Rotated Component Matrix[a]								
	Component							
	Familism	Socioeconomic	Mobility	Ethnicity	Housing Authority	Higher Density	7	8
People_15_years_and_over	-.893							
People_5_9_years	.863							
Bachelor_degree	.853							
People_0_4_years	.839							
Families_Couple_with_children	.787							
People_in_Lone_person_household	-.775							
Families_One_parent_Family	-.747							
Dwellings_Semi_detached_one_storey	.677		.543					
People_in_Group_household	-.671		-.550					
Monthly_Loan_repayment_1600_1799	-.668		-.527					
People_Weekly_Income_40_79	.568							

	1	2	3	4	5	6	7
People_Weekly_Income_80_119	.519						
People_Income_1500_or_more		.897					
Persons_Professionals_Total		.884					
Dwellings_Rented_Total_Real_estate_agent		.883					
Persons_Tradespersons_and_Related_Workers_Total		-.778					
Families_Couple_family_wo_children		.771					
Persons_Labourers_and_Related_Worker_Total		-.681					
Persons_Elemen_Clerical_Sales_Service_Workers_Total		-.672					
People_highest_school_Year_8_or_below		-.594					
People_Weekly_Income_1000_1499		.527		.518	.519		
People_Same_address_1_year_ago							
People_Different_address_5_years_ago			.933				
People_Same_address_5_years_ago			-.872				
Persons_Managers_and_Administrators_Total			-.862				
People_Different_address_1_year_ago			.808				
People_Weekly_Income_1_39							
People_Speak_English_only				.943			
People_Speaks_other_Language				-.935			
People_Speak_other_language				-.935			
People_born_in_Australia				.845			
Dwellings_Rented_Total_Other					-.860		
Dwellings_Rented_Total_State_Territory_Housing_Authority					.817		
Dwellings_Separate_House					-.777		
Monthly_Loan_repayment_2000_plus					.593		
Dwellings_Flat_unit_or_apartment_in_a_three_storey_block						.758	
Dwellings_Flat_unit_or_apartment_in_a_four_or_more_storey_block						.641	
Dwellings_Semi_detached_two_or_more_storeys							.767
Dwellings_Flat_unit_or_apartment_in_a_one_or_two_storey_block							.676
People_65_years_and_over							

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 12 iterations.

Perth 2001 Rotated Component Matrix[a]								
	Component							
	Family & Detached dwellings	Socioeconomic	Ethnicity	Mobility	Housing Authority	Higher Density	7	8
% People 15 years and over	.860							
% People in Lone person household	.858							
% Families Couple with children	-.847							
% Dwellings Separate House	-.810							
% People 65 years and over	.791							
% Families Couple family w/o children	.746							
% People 5-9 years	-.733							
% People 0-4 years	-.660							
% People Income $40 - $79	-.626							
% People in Group household	.581							
% Dwellings Flat unit or apartment: in a one or two storey block	.572							
% Dwellings Semi detached: one storey	.554							
% Dwellings Semi detached: two or more storeys								
% People Income $1,500 or more		.923						
% People Bachelor Degree		.907						
Persons: Professionals,Total		.876						
% Monthly Loan repayment $2000+		.862						
% Monthly Loan repayment $1600-1799		.805						
Persons_Labourers_and_Related_Workers_Total		-.780						
% People Income $1,000 - $1,499		.748						
Persons: Managers and Administrators,Total		.701						
Persons_Clerical_Sales_Total		-.589						
% People highest school Year 8 or below								
% People Speak other language			.962					
% People Speaks other Language			.958					
% People Speak English only			-.907					
% People born in Australia			-.713					
% People Different address 5 years ago				.922				
% People Same address 5 years ago				-.920				
% People Different address 1 year ago				.901				
% People Same address 1 year ago				-.814				

% Dwellings Rented Total,Other					-.813			
% Dwellings Rented Total, State/Territory Housing Authority					.737			
% Families One parent Family					.640			
% Dwellings Flat unit or apartment: in a four or more storey block						.666		
% Dwellings Flat unit or apartment: in a three storey block						.659		
% Dwellings Rented Total, Real estate agent							.867	
% People Income $1 - $39								.757
% People Income $80 - $119								.722

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
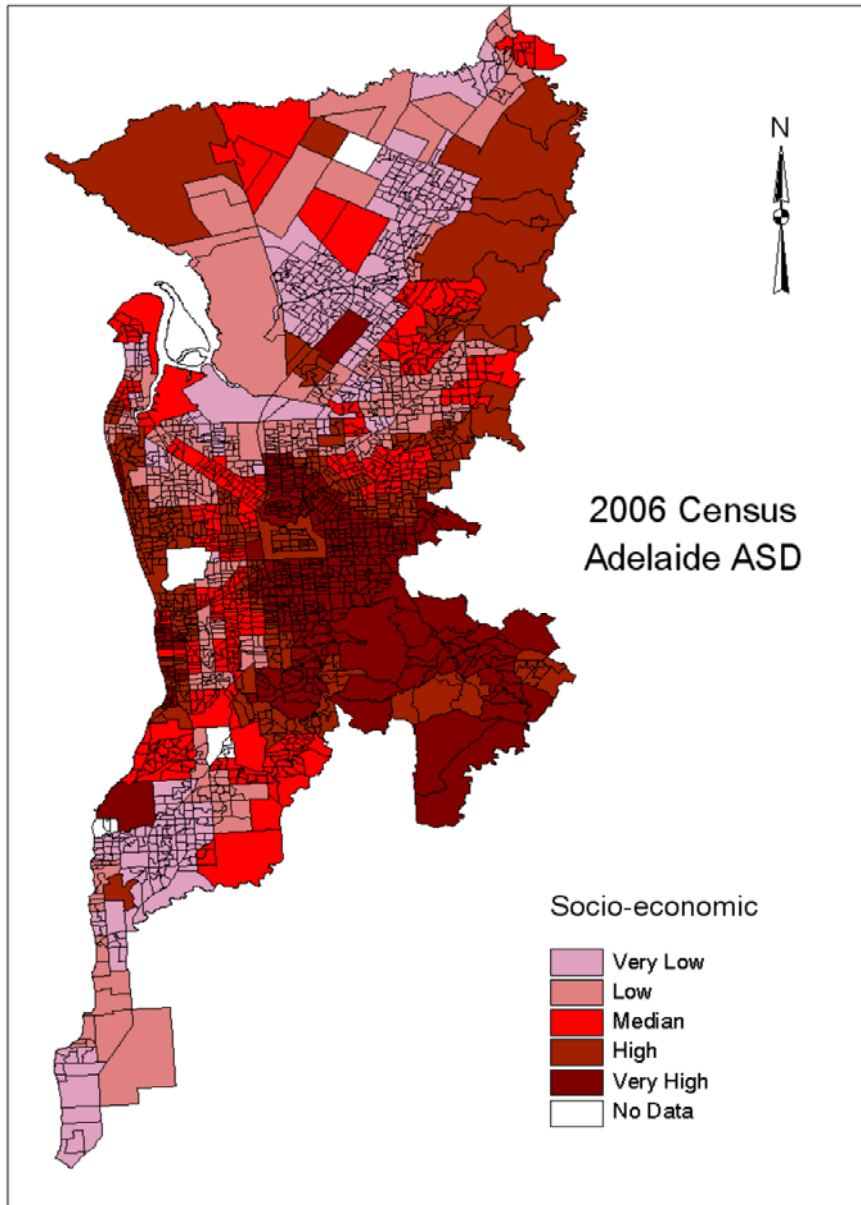
a. Rotation converged in 8 iterations.

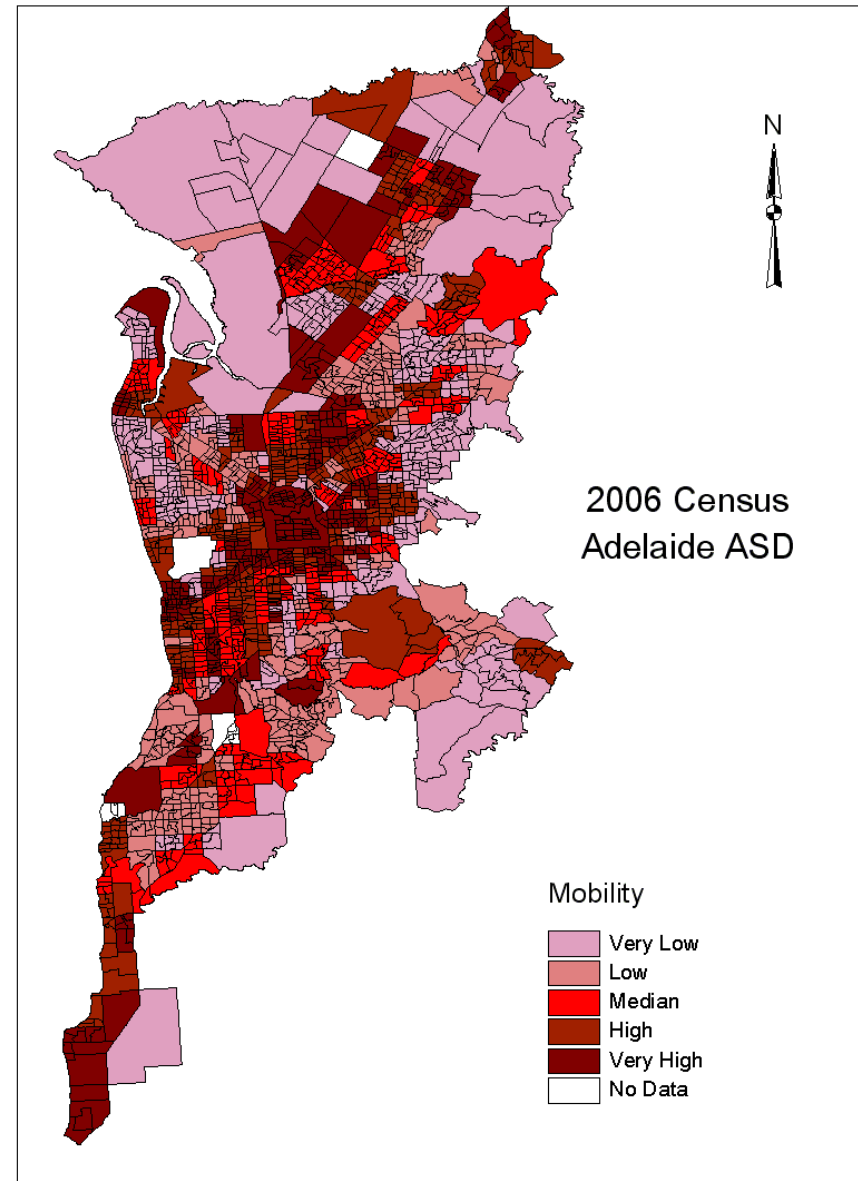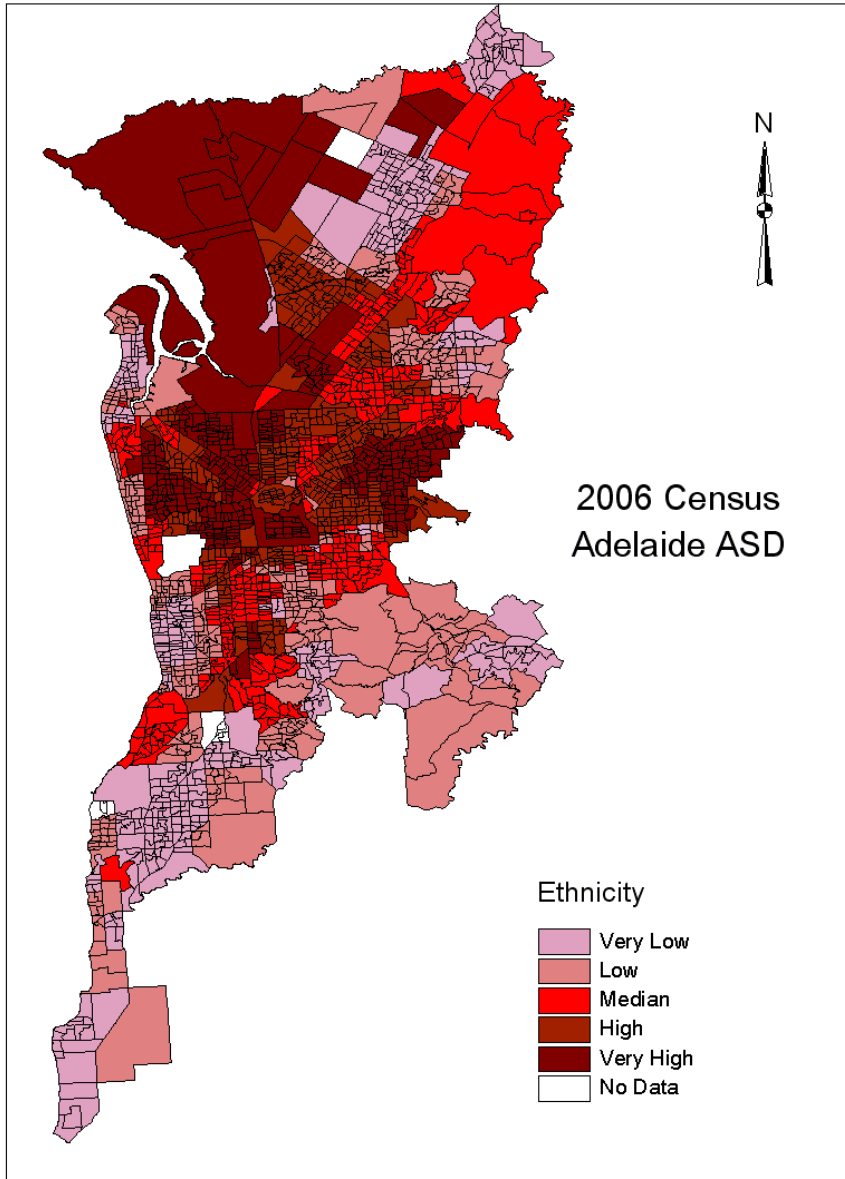**Figure 7 ASD 2006 Socio economic Factor 1**

Figure 8 ASD 2006 Mobility Factor 2

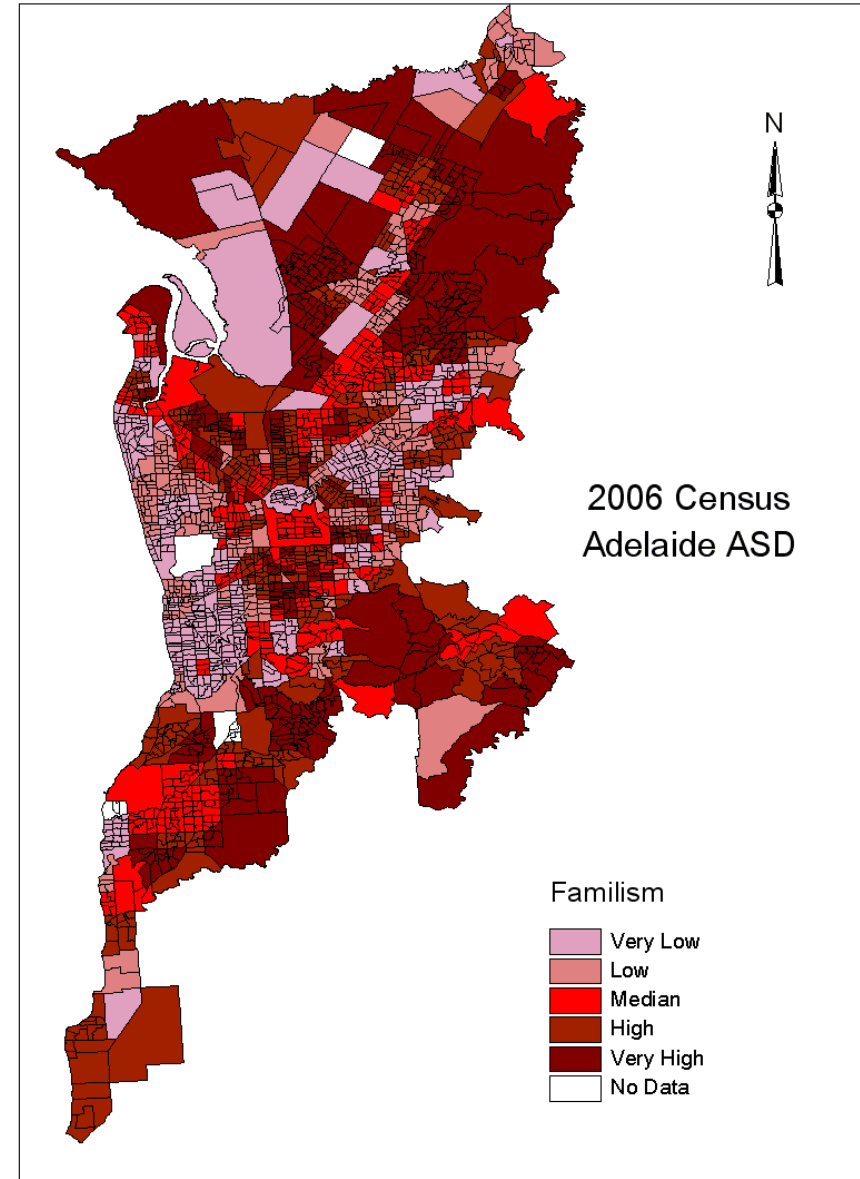**Figure 9 ASD 2006 Ethnicity Factor 3**

Figure 10 ASD 2006 Familism Factor 4s

Table 7 Independent Samples t Tests

Adelaide Independent Samples test - t test for equality of means	Group 1* mean value	Group 2** mean value	t	Sig. (2-tailed)
2001 – significant difference before development				
% Dwellings 1 or 2 storey flats, units and apartments 2001	5.09%	12.31%	-8.949	0.000
Ethnicity Factor Score 2001 (+ve High –ve Low)	-0.38	0.14	-3.898	0.000
Mobility Factor Score 2001 (+ve High –ve Low)	-0.18	0.02	-2.002	0.046
	N=62	N=230		
Percent change in 1 or 2 storey flats, units, or apartments 2001 to 2006	205.55%	-4.61%	5.469	0.000
2006 – significant difference after development				
Ethnicity Factor Score 2006 (+ve High –ve Low)	-0.4	0.15	-3.969	0.000
SEIFA Education Occupation Score 2006	977	1014	-2.673	0.008
Socio Economic Factor 2006 (+ve High –ve Low)	-0.31	0.09	2.550	0.011
Median price detached dwellings 2006	$302590	$327973	2.220	0.027
	N=62	N=230		

Melbourne - Independent Samples test - t test for equality of means	Group 1* mean value	Group 2** mean value	t	Sig. (2-tailed)
2001 – significant difference before development				
% Dwellings 1 or 2 storey flats, units and apartments 2001	3.50%	10.20%	-6.769	0.000
Familism Factor Score 2001 (-ve High +ve Low)	-0.1661	0.1590	-2.846	0.005
Ethnicity Factor Score 2001 (+ve High –ve Low)	-0.2281	0.1352	-2.824	0.005
Median price detached dwellings 2001	$240,891	$269,629	-2.747	0.006
Socioeconomic Factor Score 2001 (+ve High –ve Low)	-0.2276	0.0511	-2.222	0.027
	N=81	N=223		
Percent change in 1 or 2 storey flats, units, or apartments 2001 to 2006	217.50%	-5.50%	9.668	0.000
2006 – significant difference after development				
Median price units 2006	$310,588	$291,319	2.415	0.016
% Dwellings 1 or 2 storey flats, units and apartments 2006	7.80%	10.60%	-2.348	0.020
Median price detached dwellings 2006	$370,596	$405,856	-2.282	0.023
Median price % change units 2001 to 2006	41.1%	26.7%	2.283	0.023
Socio Economic Factor 2006 (+ve High –ve Low)	-0.2234	0.0746	-2.274	0.024
Ethnicity Factor Score 2006 (+ve High)	-0.1339	0.1299	-2.091	0.037
SEIFA Education Occupation Score 2006	1020	1045	-2.063	0.040
Familism Factor Score 2006 (-ve High +ve Low)	-0.0337	0.1988	-2.025	0.044
	N=81	N=223		

Group 1 * suburbs > 50% increase in 1 or 2 storey units, flats, apartments 2001 to 2006   Group 2 **remainder of suburbs

Sydney - Independent Samples test - t test for equality of means	Group 1* mean value	Group 2** mean value	t	Sig. (2-tailed)
2001 – significant difference before development				
% Dwellings 1 or 2 storey flats, units and apartments 2001	3.27%	6.75%	-5.025	0.000
Higher Density Factor Score 2001 (+ve High)	-0.1869	0.2121	-3.445	0.001
Median price detached dwellings 2001	$383,968	$417,340	-2.061	0.040
	N=101	N=318		
Percent change in 1 or 2 storey flats, units, or apartments 2001 to 2006	316.65%	-23.97%	7.663	0.000
2006 – significant difference after development				
Median price % change detached dwellings 2001 to 2006	53.8%	32.2%	2.555	0.012
% Dwellings 1 or 2 storey flats, units and apartments 2006	7.90%	5.90%	2.448	0.015
	N=101	N=318		

Perth Independent Samples test - t test for equality of means	Group 1* mean value	Group 2** mean value	t	Sig. (2-tailed)
2001 – significant difference before development				
Socioeconomic Factor Score 2001 (+ve High –ve Low)	-0.2832	0.3307	-4.15	0.000
% Dwellings 1 or 2 storey flats, units and apartments 2001	2.82%	5.72%	-3.424	0.001
SEIFA Education Occupation Score 2001	995.86	1040.01	-3.211	0.002
SEIFA Economic Resource Score 2001	993.97	1024.53	-2.914	0.004
Median price units 2001	$122,084	$136,470	-2.781	0.006
Median price detached dwellings 2001	$184,346	$209,168	-2.444	0.015
SEIFA Disadvantage Score 2001	993.96	1021.56	-2.504	0.013
	N=80	N=123		
Percent change in 1 or 2 storey flats, units, or apartments 2001 to 2006	347.80%	-31.64%	6.275	0.000
2006 – significant difference after development				
Socio Economic Factor 2006 (+ve High –ve Low)	-0.2686	0.2788	-3.515	0.001
SEIFA Education Occupation Score 2006	1001.74	1043.98	-3.199	0.002
Median price % change detached dwellings 2001 to 2006	171.5%	155.8%	2.618	0.010
SEIFA Disadvantage Score 2006	1008.41	1030.69	-2.233	0.027
% Dwellings 1 or 2 storey flats, units and apartments 2006	7.08%	4.98%	2.132	0.034
Median price detached dwellings 2006	$480,013	$523,164	-2.117	0.036
	N=80	N=123		

Group 1 * suburbs > 50% increase in 1 or 2 storey units, flats, apartments 2001 to 2006   Group 2 **remainder of suburbs