Locational disadvantage, socio-economic status and mobility behaviour – evidence from Australia

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Abstract: *There is evidence that specific locations exhibit poor outcomes along a range of socio-economic dimensions over a prolonged period. Although attempts to address locational disadvantage often take the form of area based policy initiatives, it is also true that geographical mobility is one means by which the impact of locational disadvantage may be mitigated. We develop a measure of individual socio-economic status (SES) that is analogous to area based measures of disadvantage which facilitates analysis of the mobility decision using a common metric. We find that mobility rates into and out of areas is largely unrelated to the individuals own SES or the SES of the origin and destination region. Individuals who move tend to be of higher SES relative to the average SES of other individuals in the origin area. A long term consequence of mobility patterns may be the increasing concentration of disadvantaged individuals in some areas.*

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1. Introduction

This paper examines the relationship between locational disadvantage, socio-economic status (SES) and mobility. Existing research suggests that location may play an important role in influencing an individual's outcomes along a range of socio-economic dimensions including educational attainment, employment and lone parenthood (Ioannides and Loury 2004; Haveman and Wolfe 1995). If a causal link does exist between location and socio-economic outcomes, the exact nature of this relationship remains unclear (Friedrichs *et al*. 2003). Various policies have been put into place in Australia and in other countries in an attempt to respond to the social exclusion often associated with locational disadvantage. Notwithstanding this, one mechanism by which the effects of locational disadvantage may be mitigated is geographic mobility. In effect, if individuals move away from areas that are characterised by poor socio-economic outcomes they may potentially avoid the consequences of residing in areas of entrenched deprivation. It remains the case however, that we know little about geographic mobility within countries and its relationship with area based socio-economic disadvantage.

The contribution of this paper is twofold. First, the analysis presents new evidence on the mobility of individuals who live in areas characterised by different levels of SES and the individual's own SES. Such evidence provides insight into whether socio-economic disadvantage is likely to become more or less concentrated over time. The second contribution is the development of a methodology that characterises an individuals own SES in a manner analogous to that used to describe the SES of geographic regions. A benefit of the SES measure developed in this paper is its multi-dimensional nature and the recognition that SES reflects more than single measures such as income or education.

The empirical analysis identifies that mobility rates into and out of areas is largely unrelated to the SES of individuals or the SES of the geographic area in which they reside. However, individuals who do move tend to be of slightly higher SES compared to the average SES of other individuals in the origin area. This latter finding highlights the potential for socio-economic deprivation to become more entrenched in specific areas over time.

The remainder of the paper is presented as follows. In the next section we present a brief literature review which describes the relevant literature associated with mobility and locational disadvantage, especially in the Australian context. Following this, in section three we describe the data used in the analysis and introduce the area based measure of socio-economic status used in the analysis. Section four discusses the methodology. In section five we present results of the empirical analysis. Section six concludes and discusses the policy implications of the analysis.

2. Literature review

Locational disadvantage, place focussed policy and geographic mobility

For some time policy makers have been concerned about the development of entrenched pockets of poverty. The underlying problem associated with these areas is often described as that of ‘locational disadvantage’. Maher (1994) characterises this as the difficulty households face in accessing resources which would facilitate improvements in well-being over time. One problem is that the outcomes exhibited by those areas may exacerbate existing inequalities over time, especially if individuals with poor SES become more concentrated in areas characterised by low existing SES.

Policy makers have responded to the problem of locational disadvantage in a variety of ways (Friedrichs *et al*. 2003). In some European countries there have been concerted attempts to develop socially heterogeneous communities through urban renewal programs (Musterd *et al*. 2003; Kearns and Parkes 2003). In a more general context, the European Union has recognised and attempted to address problems of urban disadvantage through an integrated set of policies such as the Lille Agenda that have sought, amongst other things, ‘to improve the quality of life for those living in deprived urban areas and promote an integrated approach to sustainable development’ (Atkinson 2007). Policy makers in Australia have sought to combat entrenched disadvantage through urban renewal initiatives such as the Building Better Cities program in the early 1990s (Neilson 2008), and more recently its Social Inclusion agenda (Australian Government 2008). Policies such as these are commonly characterised as place focussed or area based policy initiatives (ABIs). Although shaped by local considerations and policy objectives, ABIs often share common features such as infrastructure renewal, targeted labour market strategies and engagement of local administrations with the private sector. More recently, a common feature of ABIs has been the concerted attempt to encourage the development of intangible networks and the development of area based partnerships (Atkinson 2000).

An alternative policy response is to facilitate geographic mobility. In the United States programs such as the Moving to Opportunity (MTO) program are designed to facilitate the geographic mobility of households. Such initiatives provide a benefit that is not location specific so households have an opportunity to move to areas that offer better prospects for economic advancement (Ludwig, Duncan and Hirschfield 2001; Katz, Kling and Liebman 2001). In a similar fashion, in Australia Commonwealth Rent Assistance potentially facilitates geographic mobility by not tying housing assistance to any particular location.

Geographic mobility is also likely to be an important determinant of the effectiveness of place focussed policies and the long-term implications of locational disadvantage more generally (Bailey and Livingston 2008). Clearly, geographic mobility represents a mechanism by which individuals may mitigate the impact of locational disadvantage. In turn, the effectiveness and need for place focussed policies is likely to be closely related to patterns of geographic mobility. From a policy perspective then, understanding mobility patterns is likely to prove valuable.

Mobility and inequality in Australia

Between 1996 and 2001 around seven million Australians aged five years and over changed their place of residence. Most of those moves are associated with small distances, with around one quarter of all moves were within the same Statistical Local Area (Australian Bureau of Statistics (ABS) 2001).[1] Nonetheless, around 767,000 people moved interstate (ABS 2001). Greenwood (1997) presents a model of migration within developed countries that can be used to conceptualise the basis for such moves. In short, the household compares the utility or welfare it derives from remaining at its present location with the utility associated with moving to an alternative location. The level of welfare experienced at the origin and destination locations will reflect a number of considerations including the amenities and economic opportunities offered by each locality. The economic model of mobility posits that the individual or household will be observed to move when the difference in the welfare experienced in the origin and destination is positive after taking into account the monetary and non-monetary costs of moving.

There is a substantial body of literature on the nature of inequality in Australia (Barrett *et al*. 2000; Saunders 2001). In general the consensus appears to be that inequality measured at the *individual* level has increased in Australia over the past few decades. The empirical evidence also suggests that the extent of inequality across *regions* in Australia has increased over the past few decades (Hunter 2003). Using the ABS Census District (CD) as the unit of analysis[2], Hunter and Gregory (1996) argue that regional inequality represents a relatively small, albeit increasing proportion of total inequality. Similarly, Hunter (2003) identifies a significant increase in the level of income inequality across neighbourhoods between 1976 and 1996.

There is limited analysis of the relationship between locational disadvantage and mobility in Australia. Maher *et al.* (1992) identifies that groups characterised as socially disadvantaged, such as the low-income and unemployed, generally exhibit lower levels of geographic mobility than the population in general. Further, the disadvantaged tended to become more concentrated in inner urban areas. Overall these areas were losing population, but lower rates of mobility among the disadvantaged meant that an increasing proportion of their population consisted of

[1] The Statistical Local Area (SLA) is a general purpose spatial unit defined by the ABS. There are approximately 1,400 SLAs with their boundaries based on the boundaries of incorporated bodies of local government where these exist (ABS 2005).

[2] The CD is a spatial unit created by the ABS and traditionally it defines an area that one census collector can cover, delivering and collecting census forms, in about a ten-day period. For the 2001 Census, 37,209 CDs were defined throughout Australia (ABS 2005).

disadvantaged individuals. The authors also identify an increase in the disadvantaged population in outer urban areas of major capital cities. These areas are generally characterised by relatively low cost housing, but also often exhibit poor provision of services such as public transport.

Other studies focus on the mobility patterns of disadvantaged groups such as income support recipients. Dockery (2000) finds evidence that rather than moving to areas that offer better economic prospects (lower unemployment rates), unemployed individuals tend to move to areas that offer lower living costs, possibly leading to the development of areas of entrenched disadvantage and geographic poverty traps. Morrow (2000) notes that there is evidence that mobility rates fall as area socio-economic disadvantage rises.[3] That is, individuals who reside in areas characterised by low levels of socio-economic disadvantage are more likely to be mobile (p. 16). One possible explanation for this pattern is that income support recipients are less likely to move when they have found suitable location in disadvantaged communities where the costs of living are relatively low. Alternatively, individuals who receive government benefits and currently reside in areas of high socio-economic disadvantage may simply lack the resources to move to more advantaged areas. Morrow (2000) also finds that areas of low socio-economic disadvantage tend to attract unemployment beneficiaries. Conversely, recipients of Disability Support Pension and Sole Parent Pension tend to move to areas characterised by greater levels of socio-economic disadvantage. Other studies such as those by Marshall *et al*. (2003, 2004) and Bradbury and Chalmers (2003) identify similar patterns.

3. Data

This study uses the Household, Income and Labour Dynamics in Australia (HILDA) dataset to examine the relationship between locational disadvantage, SES and mobility.[4] The first wave of the HILDA dataset collected in 2001 contains information on approximately 7,500 families and over 12,000 individuals. The information in HILDA facilitates the construction of measures of SES for individuals. These 'individual SES' measures are analogous to the 'geographic or area measures of SES' that have been created by the ABS and are described in more detail below.

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[3] Note that Morrow (2000) uses a measure of socio-economic disadvantage where a lower score represents a **lower level of disadvantage**.

[4] This paper uses confidentialised and unconfidentialised unit record file from the HILDA survey. The HILDA Project was initiated and is funded by the Commonwealth Department of Families, Housing, Community Services and Indigenous Affairs (FaHCSIA) and is managed by the Melbourne Institute of Applied Economic and Social Research (MIAESR). The findings and views reported in this paper, however, are those of the authors and should not be attributed to either FaHCSIA or the MIAESR.

The Socio-Economic Indexes for Areas

In this paper we use the Socio-Economic Indexes for Areas (SEIFA) derived from the 2001 Census by the ABS. The SEIFA indexes are a summary measure that rank geographic areas across Australia in terms of their socio-economic characteristics. The ABS constructs four indexes which use different combinations of the demographic, family and dwelling characteristics of geographic areas to rank areas in terms of distinct, but related, concepts of socio-economic advantage or disadvantage. The four indexes rank areas in terms of their ‘Disadvantage’; their relative ‘Advantage and Disadvantage’; their access to ‘Economic Resources’; and to the average ‘Education and Occupation’ skills of the people living in an area. In essence the indexes provide a ranking of areas in terms of the set of average characteristics of a person living in the geographic area.

The indexes are derived from a set of socio-economic indicators of the geographic area. These include measures such as the proportion of people in an area who left school before completing high school, the proportion who are unemployed, or who live in a family and who have an income that is below some threshold. The set of variables used in each index varies, as do the weights assigned to each variable in constructing the ‘score’ for each index for each geographic area. The weights are estimated via Principal Components Analysis which matches the observed indicators to an underlying, unobserved concept of socio-economic disadvantage. The process of construction of the 2001 SEIFA indexes is described in detail in ABS (2006). It is important to note that the score assigned to any area should be interpreted as an ordinal measure.

The indexes were originally constructed by the ABS at the Census CD level. The scores of regions for each index are rescaled so that each index has a mean at the CD level of 1000 and a standard deviation of 100. Due to data availability, in this paper the geographic unit of analysis we will employ is that of the SLA. Statistical Local Areas are aggregations of CDs and the index values for any given SLA is the population-weighted averages of its constituent CDs. The mean values for the four ABS indexes at the SLA level are presented in Table 1.[5] The figures for the value of the SEIFA indexes at the SLA level are available from the ABS and reported in the first line of Table 1. The mean values reported are all just below 1000. Table 1 also contains the average values for the 356 SLAs represented in the HILDA data. For each respondent in the HILDA dataset the SEIFA value of the SLA in which they reside is reported in HILDA and the mean figures (standard deviation) are reported in row 2 (3) of Table 1. The mean values for the indexes of the SLAs represented in HILDA (rows 2 and 3 of Table 1) are similar to the national averages, indicating the data are broadly representative of population, in terms of geographic representation.

[5] The methodology used in this paper appears to work best for the ‘Advantage/ Disadvantage’ SEIFA and throughout most of the paper, it is this measure that is used for descriptive and analytical purposes.

TABLE 1: SEIFA SLA descriptive statistics – actual and HILDA measures.

	SEIFA Index			
	Disadvantage	Advantage/ Disadvantage	Economic Resources	Education and occupation
ABS SLA SEIFA mean values (1)	999	994	990	993
ABS SLA SEIFA mean values in HILDA (2)	999	997	997	997
Standard deviation (3)	(88)	(96)	(94)	(98)
HILDA SLA SEIFA mean values (4)	1002	999	995	1000
Standard deviation (5)	(98)	(105)	(103)	(104)
HILDA individual index mean values (6)	999	1000	1011	995
Standard deviation (7)	(243)	(236)	(224)	(266)

Source: ABS (2004) for line 1, other numbers derived from HILDA data.

4. Methodology

A SEIFA Measure for Individuals

An important contribution of this paper is to development of a technique that allows the characteristics of people who move between areas to be compared with the average characteristics of individuals in the origin and destination regions using a common metric. In particular, it is useful to consider the SES of *individuals* and compare this to the SES of the *areas* that they move to or from. To this end we construct a SEIFA measure for *individuals* based on similar principles to those used by the ABS in constructing its SEIFA measure for *geographic areas*. Using this framework, we can assign to individuals a measure of their SES that has a direct counterpart with the ABS SEIFA indexes for areas. The benefit of such an approach is that it facilitates analysis of the mobility decisions of individuals along the SES dimension.

The methodology used in the construction of the individual SES measures mirrors that used by the ABS in its construction of area level SEIFAs. A series of variables are defined for each individual in HILDA. With one exception, all of the variables used by the ABS in the construction of the Advantage/Disadvantage index are available in the HILDA dataset.[6] These variables typically take the value 1 if individuals possess some characteristic and zero otherwise. We then weight these variables using the same weights used by the ABS in their construction of the 2001 SEIFA indexes (ABS

[6] The exception was that HILDA does not contain a variable indicating that individuals used the internet at home. All individuals were assigned a value of zero for that variable in the construction of the index.

2006). Next, we place these individual scores on a scale that is consistent with that of the SEIFA indexes at the SLA level. One of the implications of this is that the individual scales have mean values similar to the SLA indexes, but a substantially larger standard deviation, consistent with the process of aggregation that removes variation from random variables.

Following each population Census the ABS creates SEIFA measures by identifying the characteristics of regions that contribute to some dimension of the SES of a region and estimating the contribution of that characteristic to the SES dimension of interest. That is, the ABS assigns a weight to each contributing factor used in the construction of the index. At the CD level, the SES value (V_{CD}) for a region in that dimension is given by the sum of these weights (w) multiplied by the region's characteristics $\left(\overline{X}_{CD}\right)$. The weights are estimated via principal components analysis so that the distribution of these SES values typically has a mean of about zero and a standard deviation of approximately 1. The CD's 'characteristics' $\left(\overline{X}_{CD}\right)$ are typically the proportion of individuals in the CD who possess some attribute such as the proportion of individuals in the region with a university degree (ABS 2004). The ABS then rescales these V_{CD} values to place them in an SES scale with a mean of 1000 and standard deviation of 100 as follows:

$$SES_{CD}^{ABS} = \left[\left(V_{CD} - \overline{V}_{CD}\right) \times \left({100}/{\hat{\sigma}_{V_{CD}}} \right) + 1000 \right]$$

where $\overline{V}_{CD}$ is the mean of all regions' values of V and $\hat{\sigma}_{V_{CD}}$ is the estimated standard deviation from that mean. Values for the index at higher levels of geographic aggregation (postal areas and SLAs) are calculated as population-weighted averages of the constituent CDs. That is, in the case of SLAs as:

$$SES_{SLA}^{ABS} = \sum_{j=1}^{J} SES_{CD_j}^{ABS} \times \frac{pop_{CD_j}}{pop_{SLA}}$$ based on all of the *j* CDs in the SLA.

In this paper, we want to compare the SES of individuals with the average SES of others in the region they live. That is, we want to compare an individual's own SES with SES_{SLA}^{ABS}. To do this we use the same weights estimated by the ABS to weight the characteristics of individuals $\left(\overline{X}_k\right)$ and use the sum of those k weighted characteristics as an individual SES scale, that is $v_i = \sum_k w_k X_k$. This can be scaled up to estimate an analogue scale to that of the ABS SLA scales.

One issue is that the distribution of the analogue scale for individuals should have a standard deviation in excess of that of the SLAs (and CDs) if it is to be consistent with the ABS SEIFA scales. The solution to that problem is to exploit the design of the HILDA survey, which was a regionally stratified sample. In 2001, it was drawn from 356 SLAs.[7] Therefore, it is possible to estimate SLA averages for the individual analogue scale and see how the distribution of these averages should be rescaled to match the ABS SEIFA distribution for the regions actually covered in the HILDA survey. The scale based on average SLA values can be matched to the actual ABS values for the SLAs contained in HILDA by the following transformation: $SES_{SLA}^{HILDA} = \left[(v_{SLA} - \bar{v}_{SLA}) \times \left(m \big/ \hat{\sigma}_{v_{SLA}} \right) + n \right]$. Note that m and n are the standard deviation and the mean of the ABS SEIFA values for SLAs actually contained in the HILDA data, which these may depart a little from 100 and 1000 respectively, so that the individual analogue scale consistent with the distribution of SES_{SLA}^{HILDA} can be estimated by $SES_{i}^{HILDA} = \left[(v_{i} - \bar{v}_{i}) \times \left(m \big/ \hat{\sigma}_{v_{SLA}} \right) + n \right]$. This scale will have the same mean as the ABS SES SLA scale from HILDA, but a larger variance, consistent with the variance of the SLA scores being an aggregate from a more dispersed distribution across individual observations.

Rows 4 and 5 of Table 1 contain descriptive statistics for the four SLA-level indexes calculated from aggregating the individual HILDA data at the SLA level. That is, rows 4 and 5 contain information on *area* based measures of SES derived from information contained in HILDA. Rows 6 and 7 of Table 1 contain the *individual* level index statistics. The average values for both the area index (row 4) and the individual index (row 6) are close to the ABS values by construction. The estimated SLA indexes (row 4) display more noise than the real values calculated by the ABS (row 2), which is to be expected given the estimates are based on a relatively small sample. The individual indexes also have substantially higher standard deviations. Our procedure of generating individual indexes is most satisfactory for the 'Advantage and Disadvantage' SEIFA and in the remainder of the paper we focus on that index.

Adequacy of the index

We are interested in identifying how well the HILDA dataset performs for the purpose of constructing measures of SES. The correlation between the ABS SLA values and the estimated SLA values based on individuals in HILDA for 2001 was high at 0.85. This indicates that individuals living in SLAs in HILDA are broadly representative of the populations within those SLAs at the time of the 2001 Census. Figure 1 below shows the distribution of SEIFA values at the SLA level for the ABS index (plus bootstrapped 95% confidence bands) and those estimated for 2001 SLAs

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[7] The 2001 HILDA sample was drawn from 488 Census Collection Districts (CDs) across Australia. Within each of these CDs, a sample of 22 to 34 dwellings was selected.

from HILDA. The distributions are similar and the density of the estimated values from HILDA lies within the confidence bands around the ABS distribution throughout much of its range. Effectively there is no significant difference between the two distributions in Figure 1 although there is evidence that both high and low SES SLAs are over-represented in the HILDA survey.

A graphical analysis of how well the estimated HILDA SEIFA values for specific SLAs match those provided by the ABS was also undertaken. If the estimates were perfect, the line would follow the 45 degree line. The slope of the line is slightly flatter than the 45 degree line suggesting the approach over-estimates the SES of low SES SLAs and underestimates that of high SES SLAs. Figure 2 shows how the average SES of the SLAs individuals live in varies with individual SES, using both the ABS SLA index values and the estimated SES of SLAs from HILDA. The lines are essentially identical, suggesting individuals are mapped onto the two SLA measures in the same way. There is also evidence that at both the bottom and the top of the SES distribution of SLAs there is slightly less variation in background than there is in mid-SES SLAs. The only other feature to note about the construction of the index is that all variables involving monetary values were deflated back to 2001 values using the CPI. Since the index is defined using specific monetary thresholds for some variables, values in later years were put into 2001 dollars to ensure they were comparable to those thresholds. Therefore, the growth in individual SES index scores apparent in Table 8 (discussed later) does not represent the impact of inflation, but it will reflect growth in real wages, for example.

FIGURE 1 – Distribution of SEIFA values at the SLA level – ABS values and HILDA estimates.

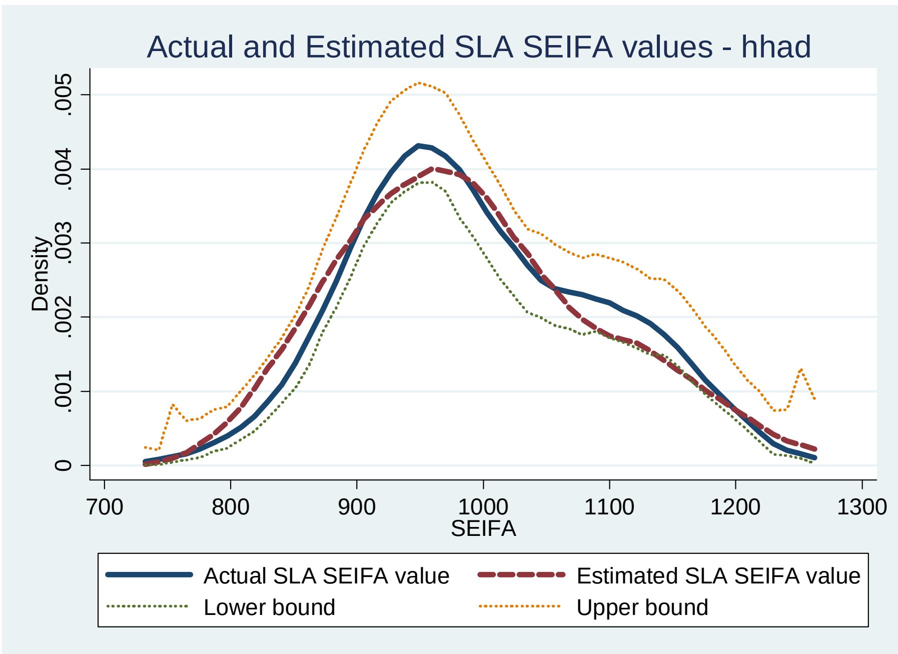
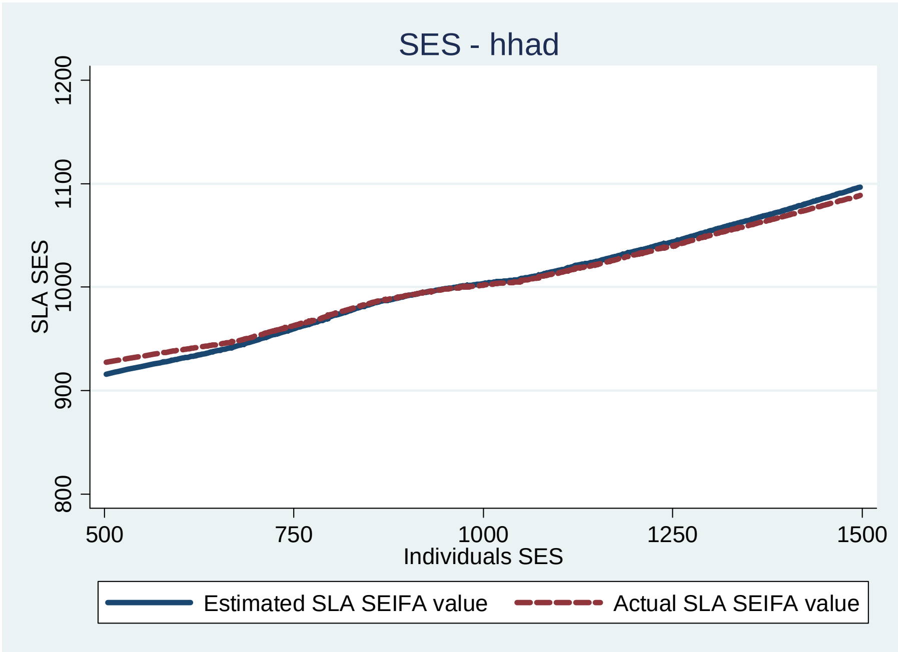


FIGURE 2: Relationship between individual SES and SLA SES



5. Results

In this section of the paper we discuss the results of the empirical analysis of the mobility decision and its relationship to locational disadvantage as captured by area and individual SEIFA measures. In column 2 of Table 2 we identify the proportion of individuals in each decile of the ABS SEIFA index of 'Advantage and Disadvantage' who report having changed their address between $(t-1)$ and t where $t = 2001, 2002, ...2006$. An examination of Table 2 does not highlight any particular mobility patterns. Individuals residing in SLAs in decile 3 report a relatively high probability of changing their address between waves (as do those in the highest decile), and for all deciles the proportion of individuals who report changing their address between waves exceed 10 per cent.

The final two columns in Table 2 show the average individual SES of non-movers and movers respectively within SES deciles, where all measures are based on reports or estimates from the wave prior to the individual moving (or not moving). Within every decile of SLA SES, the average individual SES of movers is higher than non-movers, with seven of the ten differences being statistically significant (along with the total). This suggests that individuals who are observed to move are characterised by a high SES relative to other individuals in the SLA in which they initially resided. Bailey and Livingston (2008) identify a similar pattern.

TABLE 2: Proportion moving in any twelve month period and their individual SES by SLA SES decile – SEIFA advantage/disadvantage index.

Decile in year *t*-1	Proportion moved in year *t*		Individual SES of non-movers	Individual SES of movers
	SLA SES	*Individual SES*		
Lowest decile	13.0	10.5	888	923
2nd decile	13.9	10.6	916	945
3rd decile	14.2	10.8	941	963
4th decile	11.7	15.3	966	998
5th decile	13.4	13.3	991	1013
6th decile	13.2	15.3	1008	1022
7th decile	12.1	13.3	1047	1059
8th decile	12.0	13.5	1064	1090
9th decile	13.4	15.8	1116	1140
Highest decile	14.5	13.3	1168	1183
Total	13.2	13.2	1014	1037

Note: The table estimates are based on weighted data, while the diagrams use unweighted data.

In Table 3 we report transition probabilities between various ABS area SEIFA deciles conditional on a move between waves 1 and 2 of HILDA. Among those individuals who moved from a SLA with decile ranking 1 (row 1), 34.9 per cent move to a SLA with a decile ranking of 1, and 18.8 per cent move to a SLA with a decile rank of 2. An examination of Table 3 suggests that among individuals who do move, the majority move into areas with a similar SES level as the area they moved from. This pattern is not unexpected as most internal migration by Australians involves a move that is short in a geographic sense and therefore unlikely to entail a large change in SES.

In Table 4 we set out summary characteristics of individuals who report moving and not moving across waves 1 and 2 of the HILDA survey.[8] Information on three groups of individuals are presented: low SES individuals are those who resided in an area with a SEIFA decile ranking of 1 or 2 in 2001 (the ‘low SES group’); mid ranking SES individuals who resided in an area with a SEIFA decile ranking of 5 or 6 in 2001 (the ‘medium SES group’); and, high SES individuals who resided in an area with a SEIFA decile ranking of 9 or 10 in 2001 (the ‘high SES group’). In general the results in Table 4 correspond with *a priori* expectations. For example, among the low, medium and high SES groups, movers tend to be substantially younger than the non-movers. At the same time, movers are less likely to be married. Both movers and non-movers have similar household structure in terms of the presence of dependent

[8] Patterns for movers and non-movers across other waves are similar

children of various ages. Together these patterns most likely reflect life-cycle considerations. Non-movers are older and most likely to be more established in terms of housing and family structure. Movers are more likely to be a heterogeneous group. Some will be younger unattached individuals. Others will consist of members of young families in the early stages of a housing career.

In terms of education movers generally report higher levels of education. This pattern likely reflects two features of behaviour captured by the data. First, non-movers tend to be older and have lower levels of education as a cohort relative to the population average. In addition, the higher levels of education reported by movers may reflect the greater set of economic opportunities available to more highly educated individuals. There are also marked differences in the patterns of economic participation exhibited by the various groups. The low SES group have lower levels of employment than the medium and high SES groups. For example, low SES non-movers have an employment rate of 45 per cent compared to 66 per cent for their high SES counterparts. Among the high and low SES groups, the proportion of individuals who report being not in the labour force (NILF) is higher among the non-movers. In terms of wages for those who work, for movers in the low SES group, wages are slightly higher ($16.47) than those for non-movers ($15.95). For the medium and high SES groups, however, this pattern is reversed. Finally, note that movers are more likely to report the receipt of government benefits than are non-movers.[9]

[9] Note that the receipt of government benefits (*Receive govt. ben.*) does not include family benefits such as Family Tax Benefits.

TABLE 3 – Origin and destination deciles for individuals who report changing their address between 2001 (wave 1) and 2002 (wave 2).

	ABS SEIFA decile in 2002									
ABS SEIFA decile in 2001	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
1	**0.349**	0.188	0.094	0.088	0.051	0.117	0.042	0.024	0.027	0.020
2	0.158	**0.317**	0.169	0.068	0.089	0.069	0.057	0.028	0.024	0.021
3	0.084	0.195	**0.324**	0.133	0.085	0.065	0.027	0.029	0.043	0.016
4	0.156	0.187	0.123	**0.211**	0.127	0.081	0.052	0.045	0.019	0.000
5	0.075	0.120	0.069	0.071	**0.267**	0.125	0.116	0.063	0.065	0.029
6	0.017	0.077	0.094	0.108	0.133	**0.340**	0.080	0.104	0.026	0.022
7	0.026	0.027	0.046	0.109	0.073	0.113	**0.245**	0.190	0.101	0.070
8	0.040	0.012	0.032	0.040	0.057	0.042	0.156	**0.342**	0.201	0.078
9	0.013	0.034	0.011	0.024	0.063	0.106	0.126	0.082	**0.273**	0.267
10	0.009	0.019	0.017	0.034	0.026	0.038	0.086	0.148	0.181	**0.441**

Notes to Table 3: The decile ranking used for this table is the ABS SEIFA index of advantage and disadvantage measured at the SLA level as reported in HILDA.

TABLE 4 – Movers and non-movers in waves 1 & 2 of HILDA, 2001-02

	SEIFA deciles 1 & 2		SEIFA deciles 5 & 6		SEIFA deciles 9 & 10	
	Non-movers	Movers	Non-movers	Movers	Non-movers	Movers
Age (years)	47.5	33.8	45.2	39.1	44.6	33.3
Male	0.49	0.45	0.50	0.47	0.48	0.50
Married	0.60	0.53	0.70	0.63	0.67	0.51
Has child (<2 yrs)	0.68	0.70	0.67	0.77	0.69	0.87
Has child (0-4 yrs)	0.11	0.26	0.16	0.27	0.12	0.14
Has child (5-9 yrs)	0.13	0.28	0.14	0.14	0.12	0.10
Has child (10-14 yrs)	0.16	0.21	0.21	0.18	0.15	0.07
Location						
NSW	0.30	0.33	0.31	0.34	0.39	0.40
Victoria	0.21	0.15	0.31	0.20	0.24	0.22
Queensland	0.25	0.33	0.17	0.28	0.11	0.15
South Australia	0.12	0.09	0.09	0.06	0.04	0.03
West Australia	0.05	0.03	0.12	0.12	0.12	0.08
Tas./ ACT/ NT	0.07	0.07	0.00	0.00	0.10	0.11
Capital city	0.45	0.48	0.56	0.59	0.92	0.94
Inner-regional	0.33	0.32	0.30	0.23	0.05	0.03
Outer-regional	0.22	0.20	0.14	0.19	0.03	0.03
Education						
< high school	0.59	0.48	0.46	0.36	0.25	0.18
Comp. high sch/l.	0.11	0.13	0.13	0.17	0.16	0.18
Post-sec. qual.	0.23	0.28	0.29	0.35	0.26	0.22
University degree	0.07	0.10	0.12	0.11	0.33	0.43
Immigrant status						
Australian born	0.72	0.71	0.76	0.75	0.70	0.70
English speaking imm.	0.09	0.06	0.11	0.13	0.14	0.15
Non-English speaking imm	0.19	0.23	0.14	0.12	0.15	0.15
Employment						
FT employment	0.31	0.33	0.42	0.44	0.43	0.55
PT employment	0.14	0.18	0.19	0.16	0.23	0.22
Unemployed	0.06	0.10	0.05	0.08	0.03	0.05
NILF	0.50	0.39	0.34	0.33	0.31	0.17
Wage($ per hour)	15.95	16.47	18.36	17.89	22.91	20.67
Receive govt. ben.	0.33	0.40	0.17	0.21	0.10	0.12
Weekly h/hold inc.	871	908	1,149	1,138	1,743	1,676
HH disposable income ($ pa)	39,356	41,496	49,358	48,958	70,323	67,143
Sample size	2,062	357	1,720	262	1,964	344

SES and the propensity to move

Below we present some evidence on the likelihood individuals are observed to move in the twelve months preceding year t, conditional on the SES measure (individual or of the SLA they lived in) in year $(t-1)$. In Figures 3 and 4 we show how the probability that individuals move varies according to the 'individual SEIFA value' (Figure 3) and the 'SLA SEIFA value' for the individual (Figure 4). That is, in Figure 3 on the horizontal axis we have a measure of an individual's SES as captured by the 'individual SEIFA value'. On the vertical axis we have a measure that identifies the likelihood that individuals report changing their residence across waves of HILDA. The relationship between these two variables is approximately constant. The implication of Figure 3 is that for the range of observed 'individual SEIFA values', the probability that an individual is observed to move between waves of HILDA is approximately constant. Figure 4 shows the same relationship using a measure of the individual's area based SES. The figures indicate that the probability of moving within twelve months is largely independent of an individual's SES or that of the SLA where they live though the probability may be a little lower at the bottom of the individual SES distribution than it is elsewhere.

FIGURE 3: Probability individual reports moving between waves of HILDA, individual SES.

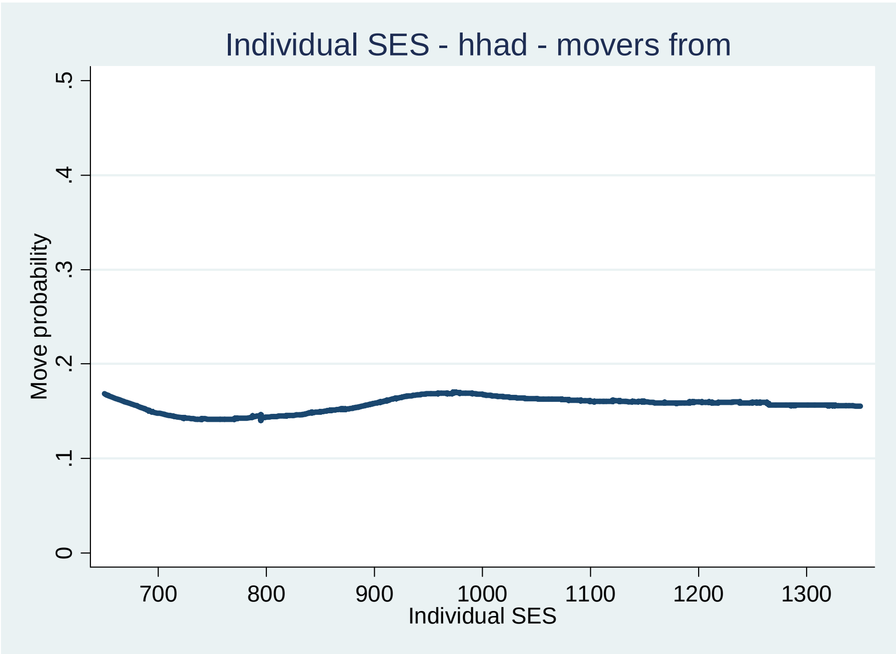
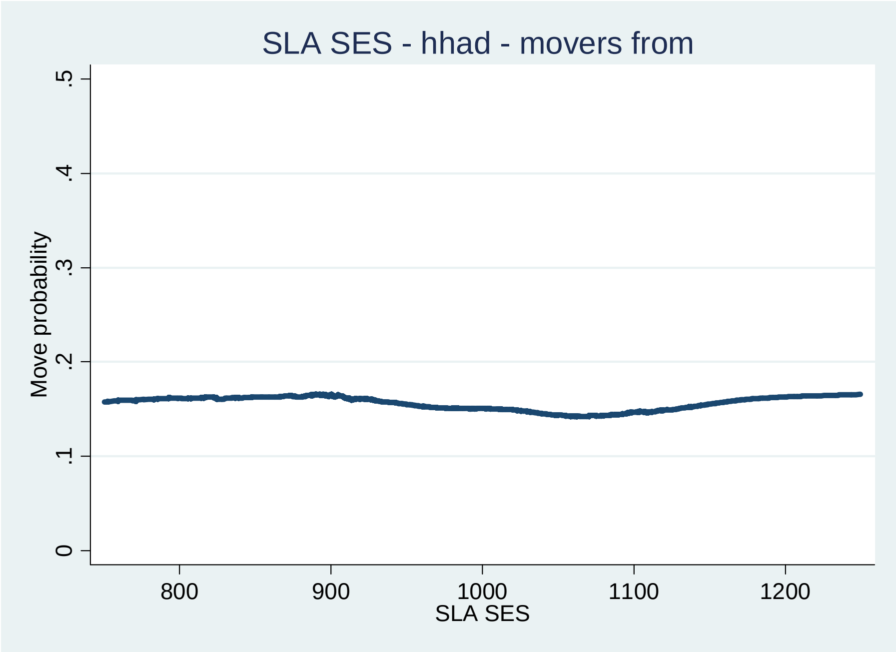
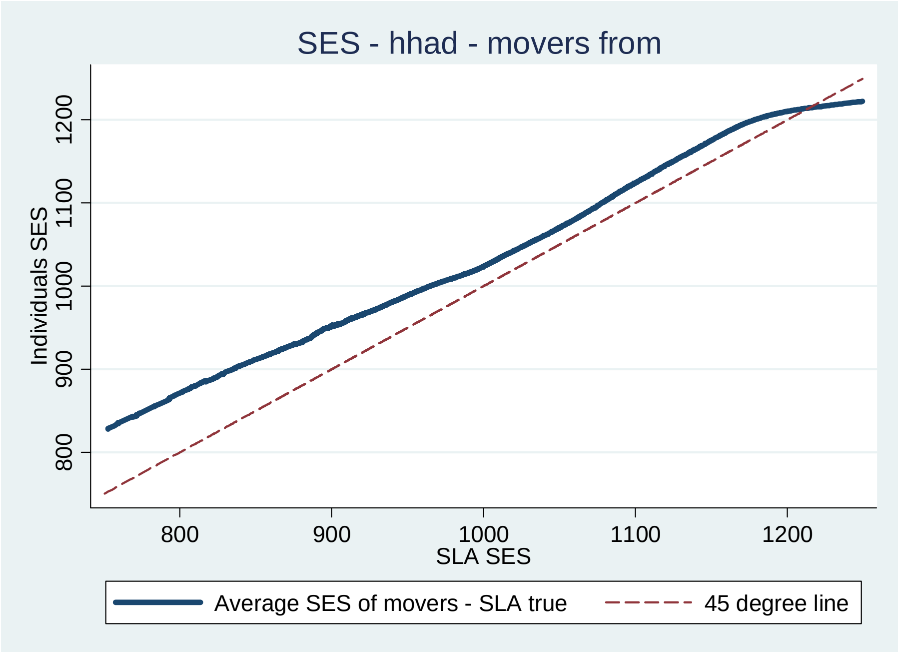


FIGURE 4: Probability individual reports moving between waves of HILDA, Statistical Local Area (SLA) SES



A key issue of interest in the present analysis is how the SES of individuals who move relates to the SES of the area from which they move. For example, it is possible that individuals who are observed to move are characterised by a high SES relative to other individuals in the SLA in which they initially reside. If so, then it is possible that over time the socio-economic disadvantage that characterise some areas may become more pronounced as the least advantaged of the disadvantaged are left behind. Figure 5 shows the relationship between the SES of the SLAs where movers come from (horizontal axis) and the average individual SES of movers (vertical axis). If movers were from average SES backgrounds compared to others in the SLAs where they lived initially, this relationship would follow the 45-degree line. In fact, the 'average SES of movers' curve lies above the 45 degree line. This suggests that movers are of above average SES in the regions they move from. While not shown, they tend to be slightly above average in the areas they move into also, though the gap between the curve and the 45-degree line is less marked than Figure 5.

FIGURE 5: Average SES of movers and SES of area they move from



One feature of the construction of the individual SES measure used in this paper is that it is not fixed through time. For example, if individuals move from unemployment to employment in a skilled occupation, their value for the individual SEIFA index will improve across waves of HILDA. Table 6 describes how the individual SEIFA index scores for non-movers and movers respectively change over time. What is evident is that the SES of both movers and non-movers increased over the period of time covered by these data. For non-movers, the average value of the individual SEIFA index increases from 1012 to 1028 between the year prior to the 'non-move' and the year after the 'non-move'. In comparison, for movers the average value of the individual SEIFA index increases from 1037 to 1060 between the year prior to the move and the year after the move. The increase tends to be marginally greater for movers than that of non-movers suggesting that movers perform relatively better than non-movers when assessed according to their individual SEIFA measure.

TABLE 6: Improvements in the outcomes of non-movers and moving individuals by SLA SES decile – SEIFA advantage/disadvantage index.

	Non-movers			Movers		
Decile in year *t*-1	Yr prior to non- move	Yr of non-move	Yr after non-move	Yr prior to move	Yr of move	Yr after move
Lowest decile	889	897	904	926	936	950
2nd decile	915	923	932	946	959	970
3rd decile	938	948	956	962	972	982
4th decile	965	969	976	987	995	1005
5th decile	988	996	1000	1006	1019	1027
6th decile	1006	1017	1023	1021	1028	1037
7th decile	1044	1054	1060	1062	1069	1087
8th decile	1063	1069	1075	1096	1103	1121
9th decile	1111	1122	1127	1141	1140	1156
Highest decile	1166	1174	1182	1186	1203	1220
Total	1012	1021	1028	1037	1047	1060

Notes: Columns 1 and 4 differ slightly from columns 3 and 4 of Table 2 because the sample is restricted here to individuals providing responses in three waves of data as compared to two waves in Table 2.

Multi-variate analysis of the mobility decision

In this section of the paper we present the results of a series of regression analyses of the mobility decision. We characterise the decision to move (M_i) as a discrete choice where $M_i = 1$ if the individual is observed to change address between successive waves of HILDA and $M_i = 0$ otherwise. We estimate a series of econometric models where we identify if the decision to move (M_i) is correlated with various socio-economic factors that may be thought to influence the mobility decision including age, education, employment behaviour and household characteristics. Following the discussion in section 3, the mobility decision may be characterised in a utility or welfare maximising framework. In particular, we assume that a move is observed for the household or individual if the unobserved increase in utility from the move exceeds a given threshold μ (Hunter and Biddle 2007). In particular:

$$M_i = \begin{cases} 1 & if\ M^* > \mu \\ 0 & if\ M^* \leq \mu \end{cases}$$

We assume that the probability that a move is observed is assumed to be affected by a range of independent variables at the individual level (X_i) and the SES of the individual at time $t-1$ (Z_{SES}). If the unobserved error term is normally distributed with a mean of zero and variance of one, we can estimate the relationship between mobility and its determinants using a probit framework. This leads to the following econometric specification:

$$P(M_i = 1) = f(\alpha X_i + \beta Z_{SES} + \varepsilon_i) \qquad (1)$$

where α and β are parameters to be estimated. In estimating the model set out in equation (1), we pool data from the various waves of HILDA. It is important to stress that the estimates presented below should be interpreted as reduced form relationships that indicate the correlations between mobility and the set of independent variables included in the model, *ceteris paribus*. In Table 7 we present summary statistics for the sample used in the estimation. As discussed previously, movers tend to have slightly higher values of individual SEIFA measures than the non-movers. Conversely, the locational measures of SES suggest that the movers and non-movers have similar locational SEIFA measures.

In Table 8, we present the results from the multi-variate (probit) models. Four sets of results are presented in Table 8 and for ease of interpretation we present the marginal effects from the probit models. In column (1), we include the SLA SEIFA measure for individuals entered as a numerical value. In column 2, we include the value of the individual SEIFA measures. Columns (3) and (4) include a variable that indicates the decile ranking of the SLA that the individual in HILDA resides in or the decile ranking of the individual's own SEIFA measure respectively.

The results from the multi-variate analysis are generally in accordance with *a priori* expectations. In general younger individuals and those who are married are more likely to be observed to move but additional children in the household is associated with a lower likelihood that mobility occurs. The results also indicate that individuals with higher education are more likely to move; the lower tendency of employed individuals to move and the higher rates of mobility for unemployed individuals (the omitted category is not in the labour force) and greater rates of mobility for indigenous Australians. Individuals in New South Wales, Victoria and South Australia are less likely to be observed moving relative to residents of Tasmania, the ACT and the Northern Territory. As expected, residing in an owner-occupied dwelling implies that it is significantly less likely that the individual is observed to move. Residing in private rental accommodation (public housing) is associated with a higher (lower) probability that the individual is observed to move.[10]

[10] Note that the omitted group here are those that live involved in a rent-buy scheme, who live rent free or in a life tenure.

TABLE 7 – Summary statistics of HILDA respondents used in statistical models

Variable name	All	Non-movers	Movers
Age 15-24 years	0.139	0.119	0.255
Age 25-34 years	0.177	0.151	0.327
Age 35-44 years	0.197	0.198	0.192
Age 45-54 years	0.185	0.198	0.109
Age 55-64 years	0.138	0.150	0.069
Age 65-74 years	0.091	0.102	0.030
Age > 74	0.073	0.082	0.018
Male	0.492	0.491	0.496
Married/ partnered	0.627	0.643	0.535
Number of individuals in household			
Aged 0-4 years	0.171	0.160	0.233
Aged 5-9 years	0.176	0.177	0.175
Aged 10-14 years	0.195	0.204	0.141
Adults	2.290	2.335	2.026
Highest education level attained			
University	0.179	0.173	0.219
Certificate/ diploma	0.296	0.296	0.299
Completed high school	0.159	0.152	0.200
Less than high school	0.364	0.378	0.281
Labour force status			
Employed	0.627	0.614	0.705
Unemployed	0.032	0.028	0.056
NILF	0.341	0.359	0.239
Full-time student	0.063	0.060	0.084
Australian born	0.727	0.721	0.762
Immigrant- Eng. speaking country	0.107	0.108	0.100
Immigrant - NESB	0.166	0.171	0.138
Aboriginal/ Torres Strait Islander	0.016	0.014	0.026
Geographic location			
Urban area	0.672	0.676	0.651
Regional area	0.312	0.309	0.331
Remote area	0.016	0.015	0.018
New South Wales	0.338	0.343	0.310
Victoria	0.254	0.261	0.213
Queensland	0.186	0.174	0.257
South Australia	0.079	0.081	0.067
Western Australia	0.093	0.093	0.095
Tasmania	0.025	0.024	0.028
ACT	0.007	0.006	0.010
Northern Territory	0.017	0.017	0.018
Presence long term health condition	0.251	0.260	0.193
Tenure status			
Owner/ occupied dwelling	0.725	0.783	0.380
Rented accommodation	0.251	0.194	0.581
Other tenure	0.025	0.022	0.038
Public housing	0.044	0.047	0.032
Value of govt pension/ benefits last FY ($)	2,785	2,873	2,267
HILDA locational SEIFA (advantage/ disadvantage)	1007	1007	1006
Individual SEIFA (advantage/ disadvantage)	1037	1034	1059
Number of observations	63,950	53,865	10,085

The key variables of interest in the present paper are those that capture the SES status of the individual, either at the SLA level (columns 1 and 3) or for the individual (columns 2 and 4). The results indicate a fairly consistent pattern in that a higher SES is associated with a greater likelihood that the individual is observed to move across waves of HILDA, *ceteris paribus*.[11] For the specifications reported in Table 8, the coefficient on the SES variable is positive and statistically significant. At the same time, the magnitude of the coefficient is small. In the case of the individual SEIFA measure of SES, being in decile 10 rather than 1 would suggest that the individual would be around only 4 per cent more likely to be observed moving across waves of HILDA.

The implication is that any systematic relationship between SES, measured either at the locational or individual level, and mobility is weakly positive. That is, individuals who are from relatively disadvantaged areas or who are assessed as having a relatively low SES are only slightly less likely to be observed to change residence across waves of HILDA, *ceteris paribus*. However, the effect of SES may be characterised as economically insignificant in that the magnitude of any observed relationship is small. Inclusion of measures of the value of government pensions and benefits received in the previous financial year did not change these results in any material way.[12]

[11] In columns 1 and 2 of Table 9 the value of the SEIFA index (SLA or individual) has been divided by 1000.

[12] The models were also estimated after removing variables that form part of the SEIFA index. It is possible that inclusion of those variables generates the small positive coefficient on the SES variables by virtue of the correlation between the SES measure and its components. The coefficients on the SES measures in these models remain similar to those reported in Table 9..

TABLE 8 – Multi-variate analysis results – marginal effects

Variable name	(1)	(2)	(3)	(4)
Age 15-24 years	0.429*	0.428*	0.429*	0.427*
	(0.017)	(0.017)	(0.017)	(0.017)
Age 25-34 years	0.315*	0.312*	0.315*	0.311*
	(0.015)	(0.015)	(0.015)	(0.015)
Age 35-44 years	0.208*	0.206*	0.208*	0.205*
	(0.013)	(0.013)	(0.013)	(0.013)
Age 45-54 years	0.141*	0.140*	0.141*	0.139*
	(0.012)	(0.012)	(0.012)	(0.012)
Age 55-64 years	0.105*	0.103*	0.105*	0.102*
	(0.011)	(0.011)	(0.011)	(0.011)
Age 65-74 years	0.041*	0.040*	0.041*	0.040*
	(0.010)	(0.010)	(0.010)	(0.010)
Male	0.002	0.002	0.002	0.002
	(0.003)	(0.003)	(0.003)	(0.003)
Married/ partnered	0.025*	0.025*	0.025*	0.025*
	(0.003)	(0.003)	(0.003)	(0.003)
No. individuals aged 0-4 years	-0.008*	-0.008*	-0.008*	-0.008*
	(0.003)	(0.003)	(0.003)	(0.003)
No. individuals aged 5-9 years	-0.014*	-0.015*	-0.014*	-0.015*
	(0.003)	(0.003)	(0.003)	(0.003)
No. individuals aged 10-14 yrs	-0.024*	-0.024*	-0.024*	-0.024*
	(0.003)	(0.003)	(0.003)	(0.003)
No. adults in HH	-0.030*	-0.030*	-0.030*	-0.030*
	(0.002)	(0.002)	(0.002)	(0.002)
University	0.024*	0.005	0.024*	0.002
	(0.004)	(0.008)	(0.004)	(0.008)
Certificate/ diploma	0.015*	0.003	0.015*	-0.001
	(0.004)	(0.006)	(0.004)	(0.006)
Completed high school	0.007	0.002	0.007	0.000
	(0.004)	(0.005)	(0.004)	(0.005)
Employed	-0.019*	-0.020*	-0.019*	-0.020*
	(0.004)	(0.004)	(0.004)	(0.004)
Unemployed	0.028*	0.032*	0.028*	0.031*
	(0.008)	(0.009)	(0.008)	(0.009)
Full-time student	-0.032*	-0.033*	-0.032*	-0.034*
	(0.005)	(0.005)	(0.005)	(0.005)

Notes to Table 9: All results are the derived from with the marginal effects calculated at the mean of the continuous variables. For discrete variables, the marginal effects reflect the change in the estimated probability of being observed to move when the discrete variable changes from zero to one. * denotes statistical significance at the 1% level and ** denotes significance at the 5% level.

TABLE 9 – Multi-variate analysis results – marginal effects (cont)

	(1)	(2)	(3)	(4)
Australian born	-0.001 (0.004)	-0.001 (0.004)	-0.001 (0.004)	-0.001 (0.004)
Immigrant- Eng. speaking country	0.010 (0.006)	0.009 (0.006)	0.010 (0.006)	0.009 (0.006)
Aboriginal/ Torres Strait Islander	0.034* (0.011)	0.033* (0.011)	0.035* (0.011)	0.034* (0.011)
Urban	0.013 (0.010)	0.015 (0.010)	0.013 (0.010)	0.015 (0.010)
Regional	0.038* (0.011)	0.037* (0.011)	0.038* (0.011)	0.037* (0.011)
New South Wales	-0.018* (0.006)	-0.019* (0.006)	-0.018* (0.006)	-0.019* (0.006)
Victoria	-0.018* (0.006)	-0.019* (0.006)	-0.018* (0.006)	-0.019* (0.006)
Queensland	0.023* (0.007)	0.021* (0.007)	0.023* (0.007)	0.021* (0.007)
South Australia	-0.021* (0.006)	-0.023* (0.006)	-0.021* (0.006)	-0.023* (0.006)
Western Australia	0.002 (0.007)	0.001 (0.007)	0.002 (0.007)	0.001 (0.007)
Presence long term health condition	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)	0.003 (0.003)
Owner/ occupied dwelling	-0.137* (0.010)	-0.138* (0.010)	-0.137* (0.010)	-0.138* (0.010)
Rented accommodation	0.079* (0.009)	0.080* (0.009)	0.079* (0.009)	0.080* (0.009)
Public housing	-0.094* (0.003)	-0.095* (0.003)	-0.094* (0.003)	-0.094* (0.003)
SLA SIEFA (/1000)	0. 043* (0.016)	-	-	-
Individual SIEFA (/1000)	-	0.038* (0.013)	-	-
SLA SIEFA decile ranking	-	-	0.001* (0.001)	-
Individual SIEFA decile ranking	-	-	-	0.004* (0.001)
Log likelihood	-22527	-22527	-22527	-22529
Psuedo R2	0.1917	0.1918	0.1917	0.1918

Notes to Table 9: All results are the derived from with the marginal effects calculated at the mean of the continuous variables. For discrete variables, the marginal effects reflect the change in the estimated probability of being observed to move when the discrete variable changes from zero to one. * denotes statistical significance at the 1% level and ** denotes significance at the 5% level.

6. Conclusions

This paper has examined the relationship between locational disadvantage, socio-economic status and mobility. Clearly, geographic mobility is an important feature of behaviour among the Australian population with around 13 per cent of individuals in HILDA changing their address each year. Potentially, this geographic mobility has important implications for area based disadvantage and place focussed policies designed to mitigate the impact of sustained local disadvantage. Despite the importance of geographic mobility in this context, very little research has examined mobility patterns. The empirical analysis in this paper identified similar rates of mobility across areas with different SES. It is also true that for movers, the SES of origin and destination locations tend to be similar. A comparison of movers and non-movers indicated that both groups are comprised of a set of heterogenous individuals and that decisions related to mobility are likely to be influenced by a range of life-cycle, social and economic considerations.

The methodology developed in this report exploited the SEIFA measures of SES status developed by the Australian Bureau of Statistics. The individual analogue to the SEIFA location index of advantage and disadvantage facilitated a comparison of the SES of individuals and the SES of origin and destination locations using a common metric. Importantly, the methodology recognises the multi-dimensional nature of SES. The analysis indicated that mobility rates into and out of areas was largely unrelated to their SES. The positive relationship between SES, measured by geographic location or at the individual level, and mobility was only weak. Further, we identified that individuals who do move tend to be of higher than average SES relative to the areas from which they move. This highlights the potential problem that locational disadvantage may become more pronounced over time as relatively high SES individuals leave disadvantaged areas. It is also noteworthy that there is evidence that movers tend to perform better than non-movers as measured by the individual’s SES in the year following the move. Understanding what facilitates this outcome is likely to be valuable from a policy perspective. Future research could, for example, exploit the panel nature of the HILDA data by linking mobility with significant life-events and improvements in the outcomes of movers.

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