

**Socio-spatial Mobility and Neighborhood Outcomes in Australia: How  
“fluid” is Australian Society?**

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## **Abstract**

Households choose places from a hierarchy of options defined by social, economic and environmental contexts and these choices are conditioned by economic contexts and family status. While we know a good deal about the choice processes we know somewhat less about the spatial outcomes of these decisions apart from the well-established finding that most residential changes involve relatively short distances. Recent research has begun to fill that gap and in this paper I extend that research by using data from the Household Income and Labor Dynamics Survey in Australia (HILDA) to construct matrices of socio-spatial movement and consider the relationship of community in-flows and out-flows and the probability moving above and below the diagonal of the matrix. The research shows that there is substantial movement across the matrix of opportunities defined by the Index of Advantage and Disadvantage (Seifa). Economic resources and social status improve an individual's chance of moving up the socio-spatial hierarchy and there is no evidence of substantial polarization across decile movements. It is true that there is substantial within decile movement but there is also movement away from the diagonal. The analysis suggests that Australia is still a fluid society.

## **Socio-spatial Mobility and Neighborhood Outcomes in Australia: How “fluid” is Australian Society?**

### *Introduction*

There is a strongly embedded notion that a fluid society (the ability to move up the social ladder or to higher quality neighborhoods) is probably a ‘better’ society with greater opportunities and fewer barriers to success. Recently there has been concern that is becoming more difficult to climb the ladder of success either across generations or within an individual's life experience. Most of the research has focused on intergenerational outcomes – do sons or daughters follow or out-perform fathers or mothers? But there is another dimension to the mobility question, namely whether individuals and families move up the housing and neighborhood ladder. The underlying question of course is whether or not whatever an individual's background, individuals and families have an equal chance of reaching a higher income bracket, getting a job they want, and from the perspective of this study living in a more advantaged area. The research reported here takes up the geographic aspect of whether or not household make advantageous moves when they change neighborhoods and residences.

In Australia as in other contexts there has always been an interest in the extent to which individuals can move up the social status ladder and from areas of disadvantage to areas of advantage. The idea that everyone should have the opportunity to improve their life, to get a ‘better’ job, and live in a ‘better’ neighborhood is a core value of the idea of an Australian ‘fair’ society. The research on the ideas of social change and social mobility in Australia have emphasized the overall high rates of social mobility in Australia and that individuals from all backgrounds move into every socioeconomic stratum in large numbers (Herscovitch, 2013). Overall, Australia has some of the highest rates of earnings and educational mobility in OECD countries and thus it is evidence of a ‘fluid society’ (OECD 2005). At the same time there is some concern with the resilience of the Australian experiment and some worry that the opportunity ladder may be under stress.<sup>1</sup> But just how much stress is there in the system and what can we say about the evidence on fluidity from residential interchanges.

Exploring these ideas the research in this paper examines the extent and nature of socio-spatial movement in Australia. Specifically the paper examines the sorting in the flow matrices of population moves across neighborhoods scaled by the Australian Socio Economic Index of advantage/disadvantage (Seifa). The paper asks three questions of the mobility data in HILDA - (a) how much overall movement is there across the matrix of communities, (b) how much upwards and downwards movement is there in the overall interchanges which occur, and (c)

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<sup>1</sup> There is a lively blog literature perhaps recently best represented by John Treadgold (2013) *Egalitarian Australia* (Economics of Contentment) which debates whether Australia is becoming a less egalitarian society and a society moving away from its core values of a “fair go” for all.

which households make gains and which households lose in the mobility process. The paper unpacks the flow matrices by income, education and occupation to examine the role of these variables in creating differential flow patterns across neighborhoods and communities in Australia.

### **Theoretical Context**

Although it has been difficult to document the effects of specific neighborhoods and communities on family and child outcomes there is still a strongly held consensus that the neighborhoods in which we live are an important factor in our opportunity structures (VanHam, et al, 2013). Those who live in better neighborhoods do have access to better schools, and likely also to a whole range of externalities that are associated with higher status neighborhoods and communities. At the simplest level we tend to believe that moving to a more advantaged neighborhood is associated with greater opportunities, and, at the same time, an escape from the problems that are often concentrated in less advantaged places. But even for those already in neighborhoods which are some way above the least advantaged, movement to higher status neighborhoods may bring further social gains. The *Strategy for Social Mobility* report published in the United Kingdom believes that greater social fluidity benefits society as a whole and that a more open and fluid society could bring gains in both productivity and subjective well-being through the reduction of social isolation (Cabinet Office, 2011).

Of course to some extent the neighborhoods we live in simply reflect our socio-economic position in society. In one view it is simply our purchasing power that determines the types of places that we can access and of course the externalities along with that purchase (Cheshire, et al. 2003). This is not to argue that places do not matter but rather that it is a complicated interaction between household status and the places in which households are located. It has been hard to establish whether it is living in a poor neighborhood (or alternatively living in an advantaged neighborhood) which influences life outcomes over and above the characteristics of the household itself.

Obviously, the urban structure organizes the goods and services that we consume in the urban environment and these goods and services can only be consumed by living in particular places. In advantaged neighborhoods well laid out parks and good schools and in disadvantaged neighborhoods abandoned buildings and inadequate public services are all factored into house prices. Indeed hedonic studies of housing markets confirm that access to amenities, greater security, and good access to public services are all capitalized into house prices (Cheshire, 2012). Thus, house prices in fact reflect underlying differences in access to opportunities and in turn are reflected in the ordering of communities by status.

This theoretical context becomes important when we turn to making policy issues, to deciding how to design initiatives to overcome poverty and disadvantage more generally. Do we focus on places – a place based approach – or on people? The “place prosperity vs people prosperity has been a continuing and debate (Bolton, 1992), but it is not clear that low income populations are ‘locked into’ poverty areas. It may well be that that there is much more movement across low income neighborhoods than has been suggested in previous work. This paper is part of a project to probe the structure of the whole matrix of moves not just the clustering of disadvantaged populations. By examining the complete matrix and the distribution across all deciles of advantage and disadvantage we can begin to ask the question – is there a problem or are households navigating the urban structure successfully?

### **Previous research**

There are three relevant research literatures which serve as a context for the present study – the extensive literature on intergenerational mobility, studies of socio-spatial mobility and residential sorting, and specific investigations of movements into and out of poverty neighborhoods.

#### *Intergenerational mobility*

The research on intergenerational social mobility is about the relationship between the socioeconomic status of parents and the status that their children achieve as they complete their education and enter the labor market. As others have pointed out the question is about whether or not individuals move up and down the social ladder compared to where their parents were on the on the ladder. The research is now substantial though not always in agreement.<sup>2</sup> Still, the general thinking is that in many, if not most societies, an individual’s wage, education and occupation tends to be related to those of his or her parents (OECD, 2010). Much of the research focuses on educational attainment as educational attainment is closely linked to human capital formation and labor productivity. Because of the underlying policy questions of how we can change the likelihood of upward or, conversely, downward mobility there has been not only a push to understand more about intergenerational mobility, there has been a specific focus on intervention in early childhood education to increase the chances for upward mobility (Beller and Hunt, 2006).

The broad range of studies across OECD countries shows quite clearly that there is considerable variation in the amount of intergenerational mobility. The OECD (2010) studies reaffirm the positive relationship between parental socioeconomic background, and children's educational wage outcomes but also that there is considerable variation in national outcomes. Perhaps what is most

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<sup>2</sup> The literature on intergenerational mobility is substantial and well beyond the specific scope of this paper but further reading can be found at Hauser and Warren, (1997) and Ganzeboom, Luijkx and Treiman, 1989).

interesting in the recent studies is the strong distinctions between OECD countries which seem to be relatively immobile, including France and the Southern European States, while the Nordic countries appear to provide much greater mobility. For the latter the linkages between parental status and children outcomes are much lower implying greater mobility. These differences across countries have led to a discussion of the way in which inequality in society can affect the levels of social mobility. There is now tentative evidence that, at least for sons, those who grow up in countries that are more unequal in the 1970s were less likely to experience social mobility by the late 1990s, that is 20 years later (Andrews and Leigh, 2009).

### *Socio-spatial mobility*

The reviews of intergenerational mobility provide a context within which we will examine spatial rather than temporal mobility. The intergenerational studies show that where you start (the social context) matters in the likelihood of moving up or down the social ladder. Similarly, we will argue that where you start geographically also influences the likelihood of moving up or down the socio-spatial matrix. That is, do households when they relocate across the socioeconomic structure of cities make gains or incur losses in terms of levels of advantage/disadvantage. To truly parallel the intergenerational studies we would like to examine the spatial moves of children as they leave home and form their own households. Such a study will require much longer panel data than is currently available in the HILDA context or most other panel studies. Nevertheless, there is much we can say about how open a society is by examining the shifts in patterns across the socioeconomic structure of communities and neighborhoods over a decade long period.

Some literature has already suggested that there is considerable socio-spatial movement. Previous research showed that there was spatial movement across a matrix of US neighborhoods defined by socio-economic status (Clark and Rivers, 2013). Similar studies of movement across a set of New Zealand neighborhoods also found robust movement across the matrix but that the degree of upward mobility achieved is negatively affected by the level of deprivation at the neighborhood of origin. Even after controlling for the attributes of movers, the more deprived the neighborhood of origin is, the lower the degree of upward mobility for those who moved (Clark and Morrison, 2012).

In the British context Bailey and Livingston (2007) and Clark et al (2012) have shown that the higher the SES level of a household the greater likelihood of leaving disadvantaged areas. This is another way of stressing that where you begin does have an impact on your chances of moving up. Thus, as in the case of intergenerational movement, there are links between initial and later statuses. At the same time, Bailey and Livingston (2007) found that contrary to many studies of poverty areas, that these less advantaged neighborhoods and communities are

not isolated within the city – “deprived areas do not appear disconnected from the wider housing system. Around a half of all migrants into/out of deprived areas come from/go to non-deprived areas. If we look at the most deprived 10% of neighborhoods in a given city-region, the statistic is the same. This does not support the idea that deprived areas are cut off from the rest of the housing system” ( p. 46). The role of the housing market in affecting the levels of connection is also central in the Clark et al (2012) research. There is also research which shows that life course events do not always lead to neighborhood quality adjustments (Rabe and Taylor, 2010).

The Australian studies of socio-spatial movement have suggested also that context matters, and that those individuals and households with higher SES status move out of lower decile areas. The implication is that disadvantage areas can be further stigmatized by having only the lowest SES households (Ryan and Whelan, 2010). The most comprehensive recent study of spatial mobility in Australia, and an important context for the present study examined mobility across areas of advantage and dis-advantage using the Australia socio-economic indices (Seifa) created by the Australia Bureau of Statistics (Black et al, 2009). The findings of this study are important and relevant for the present research on socio-spatial mobility as it examined how Seifa level affected locational choice, what caused upward and downward movement, and what were the nature of labor market outcomes from spatial mobility. Most moves are local and naturally there was substantial movement on the diagonal of the Seifa matrix. And, SES was positively related to Seifa level. However, unlike the US and European research, the study did not find clear patterns in the upward and downward movement of individuals. Re-examining that question is central in the analysis section of this study.

### *Entering and leaving poverty*

The work on spatial relocation in the United States has concentrated on moves in and out of poverty neighborhoods and how mobility creates or reinforces poverty and ethnic concentration. Quillian (2003) shows that non-poor blacks are more likely than poor blacks to choose predominantly white residential neighbourhoods when they move. This mobility behaviour is consistent with mobility behavior in general wherein minorities attempt to leave lower class and lower middle class neighbourhoods for middle class neighbourhoods. The process means that single parent minority households who tend to be poorer will end up in poorer neighbourhoods with lower probabilities of being able to leave those neighbourhoods. It is here that the intersection of changes in life circumstances and residential location can interact – thus unemployment and being unmarried can limit the accumulation of human capital and the income necessary for moving to, and living in predominantly owner occupied housing.

The process of moving on or being ‘trapped’, in poor neighborhoods is clearly related to resources. Education, employment and training have the potential to stimulate mobility out of deprived areas. To the extent that they are successful, *those who get on, get out* and the outcome lowers rather than raises the average level of deprivation in an area (Cheshire, et al. 2003). Several studies have demonstrated empirically the influence of income and socio-economic status on movements in and out of deprived neighborhoods (South, Crowder and Chavez. 2005; South Pais and Crowder, 2011, Bolt, van Kempen et al. (2008). Thus, as Schaake et al (2009) point out, people with higher income are more likely to move out of neighborhoods through a sorting process which reinforces the concentrations of the have and have-nots into selected neighborhoods. Gramlich et al (1992) and Anderson and Brama (2004) each show that even though the poor as a whole are quite mobile, there is a tendency of people who move into deprived areas to be poorer than those on average in the area which leads to increased neighborhood deprivation (Anderson and Brama, 2004). Recent research has shown that spatial sorting continues to operate even in communities where there is a strong policy interest in mixing, for example in the Dutch context (Van Ham and Feijten, 2008). This is partly because mobility decisions can be triggered by the presence of minority populations (Bolt and van Kempen 2008).

This review suggests that there are important unresolved issues in general with respect to socio-spatial mobility, and specific questions about these patterns in Australia. While we know that most moves are local moves and we expect considerable resilience within neighborhoods we still need a better understanding of (a) the amount of mobility in the matrix of exchanges – moves from one level of advantage to another and (b) how much SES status influences the ability of individuals to move up or alternatively to lose status when they move. Ultimately this brings us back to the question of how much fluidity there is in Australian society.

## **Data**

The data to examine socio-spatial mobility in Australia come from the first 10 waves of the Household Income and Labor Dynamics in Australia survey (HILDA). The survey is a longitudinal survey of approximately 7,600 households with about 19,900 respondents. The survey is modeled on and is similar to surveys in the US (the Panel Study of Income Dynamics, PSID) and the British Household Panel Survey (now called the ‘Understanding Society’ study). In the present study the mobility measures and variables are drawn individuals 17 years and older. It is a yearly survey begun in 2001 and is ongoing. The survey in Australia covers a wide array of economic and labor market measures but also has detailed data on household composition and migration. Unlike most other panel surveys the HILDA survey also collects data on perceived outcomes of residential location and satisfaction with a set of measures of housing, neighborhood and community satisfaction.

The Seifa indices were constructed by the Australian Bureau of statistics using 2001 census data and are available as part of the HILDA data set. They are similar to the Townsend indices constructed for small areas in the United Kingdom (Townsend, 1979) and like the New Zealand Deprivation indices constructed by the New Zealand Ministry of Health (White et al, 2008). The measures are representative of the geographic units in HILDA as of 2001 and a new set of indices were issued in 2006. Although it is quite probable that some areas have changed their Seifa values in the last decade because we are using relative rankings is unlikely that there are major changes in the Seifa relative positions. Certainly, we would not expect small geographic areas to shift significantly in this 10 year period. That said, it is a caveat with respect to this analysis.

There are two general Seifa indices and two each for occupation, and education. One of the general indices measures relative disadvantage using census measures which capture the extent to which areas are disadvantaged and a second measure of relative advantage and disadvantage again using census data, captures a more general view of the distribution of advantage and disadvantage. In this study we use the Seifa index of relative advantage and disadvantage.

The census measures included in the Seifa index of relative advantage and disadvantage include measures of family and social status such as the proportion of one parent families and the lack of access to cars and the internet, occupational measures of low skill workers and professional workers, economic resources measured by the proportion with a high mortgage, or high rents, and educational characteristics, including those with an advanced diploma. The specific measures in each index are listed in the reports from the Australian Bureau of Statistics. The measures are calculated for approximately 37,000 collection districts and the scores for these collection districts are groups into deciles of advantage and disadvantage. Thus, by examining the moves between these deciles we are measuring changes in locality status for Australia as a whole. As part of the analysis we provide some data on moves within the major metropolitan areas, but the primary focus is on the overall fluidity within Australian society.

## **Analysis**

In the analysis we examine the three questions posed in the introduction – (1) how much mobility is there in the matrix of moves, (2) what is the level of connection in the matrix, and (3) what is the relationship of moves to socio-economic status.

### *(1) Matrices of flows and fluidity across communities*

The matrix of community exchange is well populated. There are substantial numbers of observations in all most all the cells (Table 1). The row

cell values are conditional probabilities representing the degree of stability (staying on the diagonal) or mobility (off diagonal moves) exhibited by movers in their choice of neighborhood. They represent the probability that someone who changes their address from one year to the next will remain within the same socio-economic band implied by the disadvantage index value or move up or down the matrix of opportunities (Table 2). Moves are independent of the choice of *geographic* location because an advantage or disadvantage level can appear anywhere within the country. The focus therefore is purely on mobility across the deciles of deprivation and not across geography per se.

Any change can be measured as a difference in the probability of moving from  $i$  to  $j$  compared to moving in the other direction, from  $j$  to  $i$ . The probability that someone will move from advantage/disadvantage 1 to advantage/disadvantage 2 is  $p_{12}$  and in the reverse direction is  $p_{21}$ . If movement was symmetrical throughout the matrix, that is if  $p_{12} = p_{21}$ , then there would be no net shift in the population either into out of (deprived) areas. We define upward mobility as moves above the diagonal and moves below the diagonal as downward mobility, and moves where ( $i=j$ ) the *same* category as stability (within the decile) but of course there is considerable variation within any particular decile. In the matrix overall about 19% stay in the decile of origin when they move and approximately equal proportions move above the diagonal and below the diagonal.

There are three major findings revealed in this matrix of moves. First, we can note the extensive circulation among *all* categories of neighborhoods. . Second, when people move, about a tenth to a fifth are unlikely to change the deprivation level of their neighborhood, and in the case of the most advantaged or disadvantaged neighborhoods this rises to more than 35%. Third, in both periods there is a non-zero probability that someone will move from origin  $i$  to destination  $j$  regardless of how far they are apart in terms of disadvantage. Still, the further away in disadvantage terms a destination is from that of the origin, the less likely someone is to move there regardless of whether one is moving up or down in deprivation terms.

Table 1: Flows across the matrix of community advantage/disadvantage

|               | Advantage Scale Destination decile |      |      |      |      |      |      |      |      |         | Total |      |
|---------------|------------------------------------|------|------|------|------|------|------|------|------|---------|-------|------|
|               | Least 1                            | 2    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | Most 10 |       |      |
| Origin decile | 1                                  | 507  | 283  | 259  | 206  | 139  | 132  | 82   | 70   | 42      | 25    | 1745 |
|               | 2                                  | 280  | 363  | 315  | 261  | 224  | 167  | 115  | 110  | 58      | 29    | 1922 |
|               | 3                                  | 207  | 355  | 363  | 284  | 217  | 191  | 165  | 116  | 80      | 35    | 2013 |
|               | 4                                  | 156  | 197  | 246  | 212  | 214  | 193  | 173  | 99   | 84      | 51    | 1625 |
|               | 5                                  | 104  | 163  | 197  | 184  | 219  | 207  | 191  | 196  | 138     | 46    | 1645 |
|               | 6                                  | 81   | 133  | 151  | 159  | 206  | 170  | 236  | 178  | 102     | 76    | 1492 |
|               | 7                                  | 89   | 114  | 157  | 117  | 196  | 198  | 229  | 214  | 165     | 94    | 1573 |
|               | 8                                  | 80   | 84   | 124  | 116  | 150  | 162  | 193  | 242  | 261     | 168   | 1580 |
|               | 9                                  | 53   | 70   | 108  | 78   | 143  | 181  | 234  | 225  | 312     | 356   | 1760 |
|               | 10                                 | 36   | 47   | 55   | 96   | 78   | 136  | 169  | 219  | 397     | 680   | 1913 |
| Total         | 1593                               | 1809 | 1975 | 1713 | 1786 | 1737 | 1787 | 1669 | 1639 | 1560    | 17268 |      |

Table 2: Row percentages of mobility (conditional probabilities)

|               | Advantage Scale Destination |       |       |       |       |       |       |       |       |         | Total |      |
|---------------|-----------------------------|-------|-------|-------|-------|-------|-------|-------|-------|---------|-------|------|
|               | Least 1                     | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Most 10 |       |      |
| Origin decile | 1                           | .2905 | .1622 | .1484 | .1181 | .0797 | .0756 | .0047 | .0401 | .0241   | .0143 | 1745 |
|               | 2                           | .1457 | .1889 | .1639 | .1358 | .1165 | .0869 | .0598 | .0572 | .0302   | .0151 | 1922 |
|               | 3                           | .1028 | .1764 | .1803 | .1411 | .1078 | .0949 | .0820 | .0576 | .0397   | .0174 | 2013 |
|               | 4                           | .0960 | .1212 | .1514 | .1305 | .1317 | .1188 | .1065 | .0690 | .0517   | .0314 | 1625 |
|               | 5                           | .0632 | .0991 | .1198 | .1119 | .1331 | .1258 | .1161 | .1191 | .0839   | .0280 | 1645 |
|               | 6                           | .0543 | .0891 | .1012 | .1066 | .1381 | .1139 | .1582 | .1193 | .0684   | .0509 | 1492 |
|               | 7                           | .0566 | .0725 | .0998 | .0744 | .1246 | .1259 | .1456 | .1360 | .1049   | .0598 | 1573 |
|               | 8                           | .0506 | .0532 | .0785 | .0734 | .0949 | .1025 | .1222 | .1532 | .1652   | .1063 | 1580 |
|               | 9                           | .0301 | .0398 | .0614 | .0443 | .0813 | .1028 | .1330 | .1278 | .1773   | .2023 | 1760 |
|               | 10                          | .0188 | .0246 | .0288 | .0502 | .0408 | .0711 | .0883 | .1145 | .2075   | .3555 | 1913 |
| Total         | 1593                        | 1809  | 1975  | 1713  | 1786  | 1737  | 1787  | 1669  | 1639  | 1560    | 17268 |      |

## *(2) Levels of connection*

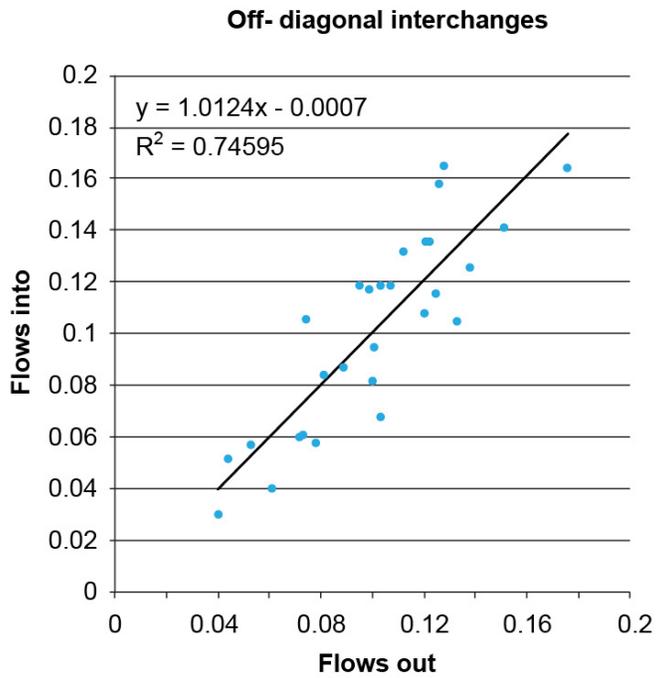
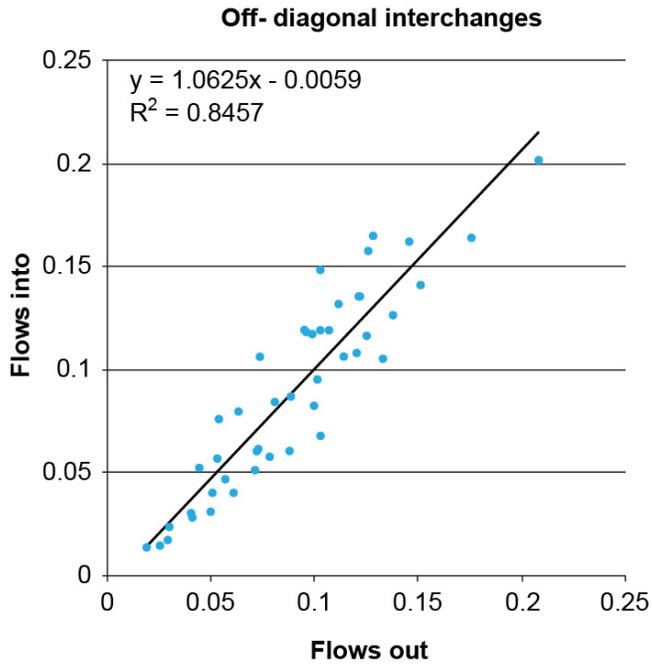
The question of whether or not the most deprived areas are isolated within the urban structure is of considerable importance and has been a central part of analyses especially with respect to whether or not there is polarization arising from the matrix of moves using UK panel data. In this section we explore similar ideas with the Australian data with respect to (a) how connected is the lowest decile to other deciles in the matrix, (b) the influence a resident's starting position may have on their subsequent mobility in advantage/ disadvantage terms and (c) how the relative shifts into and out of deciles can create concentrations of poverty and wealth.

Utilizing our previous notion of off diagonal moves ( $i > j$ ) and ( $i < j$ ) we can plot the off diagonal probabilities from Table 2 and this is portrayed in Figure 1. (see also Morrison and Nissan, 2010 for a presentation of the technique). If the corresponding transitions were equal, all points would lie along the 45 degree line. Off-diagonal points therefore indicate net gains and losses to other deciles.

The overall level of correspondence between the probability of arriving and leaving any given disadvantage decile is quite strong ( $r^2 = 0.84$ ). The slope is greater than unity implying that there is a higher probability of moving to more advantaged areas, that is up the scale. If we think of this as the average connection rate we can compare the connection rate for the lowest decile, where we define 'entry' and 'exit' rates respectively as the proportion of in-migrants to deprived areas who come from non-deprived areas and the proportion of out-migrants from deprived areas who end up in a non-deprived area. The connection rate defined as one-half the entry and exit proportions is for the lowest decile area .70 which is only slightly lower than the average connection rate and we conclude that there is no evidence of isolation for the lowest decile. It is relatively connected to the larger matrix of opportunity.

We know that there is strong evidence of regression to the mean – moves up from lower advantage areas and from higher advantage areas up and down respectively. To underscore the fact that in fact there is a strong relationship (certainly a stronger relationship than exists for intergenerational mobility) we provide the same plots without the top and bottom deciles where there can only be moves up or down (or within the decile). In this way we demonstrate that the relationship is not being driven by the extremes in the matrix.

Figure 1: Off Diagonal flows across Australian deciles of advantage/ disadvantage



One of our main interests in these transition tables is in the influence a resident's starting position may have on their subsequent mobility in decile terms. The results can be read directly from the off-diagonal cells in Table 2. They each exhibit similar properties which we see in the first and last rows of the conditional transition matrix. The probability of moving upwards from decile 1 to successively more advantaged neighborhoods, and the probability of moving down from decile 10 to less advantaged neighborhoods demonstrates just this effect. When someone does move to another neighborhood the chances of doing so declines the further away the destination is in decile terms. Thus, as the table shows, the probability of moving from 1 to 2 is .16, the probability of moving from 1 to 5 is .06, half the probability of the move from 1 to 2, and from 1 to 10 the probability is extremely small. Similarly, for moves from decile 10 the probabilities decline quite rapidly. As we note elsewhere the probability of staying in decile 10 is high and the probability of a move to the decile adjacent is also high.

### *(3) Analyzing the connection of SES to movements in the matrix*

We have established that there is considerable fluidity in moves across the matrix of advantage and disadvantage in Australia. Now we can explore the way in which those moves are linked to measures of resources and socioeconomic status. The question here is whether or not those with higher levels of resources and socioeconomic status are significantly more likely to move up when they relocate within the matrix of communities. To do this we examine the moves of those in the top quintile of incomes, those with bachelor's degree or more education, and those in professional occupations.

We first plot the probability of moving up from the lowest deciles (the most disadvantaged deciles) we also plot the probability of moving to the top three deciles from each of the origin deciles. For moving from the lowest deciles education and occupation matter and increase the likelihood of moving up, but being in the top income quintile has a much less pronounced effect (Figure 2). For income the modest effect occurs for those who move to deciles 7 and above, but not for moves from the very lowest decile. For education and occupation the moves to more advantaged deciles is a regular increase especially for movers from origins 3 and 4, that is just above the most disadvantaged deciles.

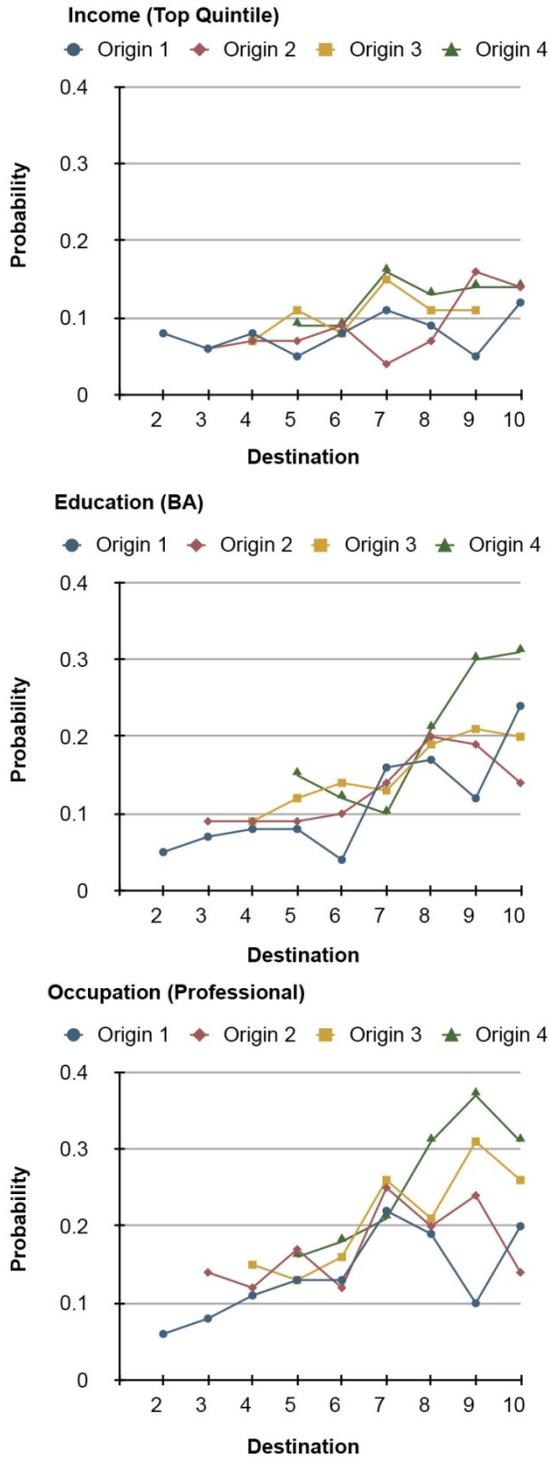


Figure 2: Probability moving above the current origin for movers in deciles 1-4.

The results can be summarized by using the aggregated outcome of moves to deciles 8-10. That is if you are in the top quintile and in decile 1 and you move, what is the probability of moving to the top three quintiles (Figure 3). The probabilities of moving to the top deciles increase by nearly two times across the origins from the lowest deciles. For deciles 6 and 7 there is a .3 to .4 probability that a mover who is a professional, has a BA or more, and is in the top income quintile will be able to affect a move to the top deciles. For deciles 2 and 3 the probabilities are below .2. It is clear that resources and status do not generate a uniform upward movement and much of the movement even for these groups (by subtraction) is within the decile they are already located or to nearby deciles.

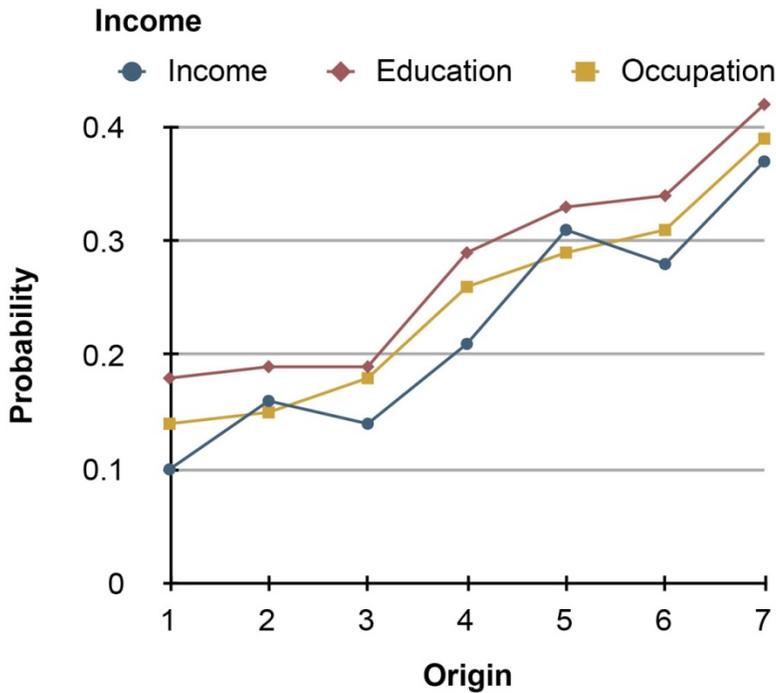


Figure 3: Probability of moving from deciles 1 through 7 to deciles 8-10 by origin

We earlier noted that there is considerable selection by socio-economic status and those with higher incomes, more education and in professional occupations are likely to be in more advantaged neighborhoods. This shows up quite clearly in Table 3. A simple comparison of the top and bottom quintiles drives home the sorting that occurs in the urban matrix. More than 50 percent of the top income, more educated, and professional individuals are in the top two deciles (the top quintile). In contrast only about 16 percent of the top earners, the more educated and professional are in the bottom two quintiles.

When we turn to mobility behavior the numbers moving in and out of the lowest deciles are about the same but there is considerable mobility out of the top quintile. This simple table also provides support for our arguments about the continuing fluidity in the Australia neighborhood matrix. While those with more resources are in the top 2 deciles there is considerable movement across the matrix even for the more resourced individuals (Table 3). It is further evidence of the fluidity in the overall matrix of movement.

Table 3: Proportion who stay, move in, or move out of the top and bottom quintiles by income, education and occupation

|            | Top Quintile |            |            | Bottom Quintile |           |           |
|------------|--------------|------------|------------|-----------------|-----------|-----------|
|            | Stay         | Move out   | Move in    | Stay            | Move out  | Move in   |
| Income     | 562 (22.0)   | 440 (17.2) | 282 (11.0) | 82 (3.2)        | 161 (6.3) | 181 (7.1) |
| Education  | 740 (20.0)   | 856 (23.2) | 540 (14.6) | 92 (2.5)        | 231 (6.3) | 281 (7.6) |
| Occupation | 842 (19.6)   | 740 (17.6) | 477 (11.4) | 106 (2.5)       | 320 (7.6) | 324 (7.7) |

Note: income is being in the top quintile, education BA plus, occupation = professional

A parallel analysis to the moves up from the lowest deciles examines the probability of moving down from the top 4 deciles (Figure 4). The probabilities fall quite steeply for all origins but especially for the highest decile. Here the probability of moving to the next category is below .4 and the probabilities continue to decline in a concave fashion. Again however, the graphs suggest a considerable amount of movement across the matrix and while income, and social status matters the outcomes are not simply determined by resources and status. In this sense the results are similar to the findings from the studies in intergenerational social mobility.

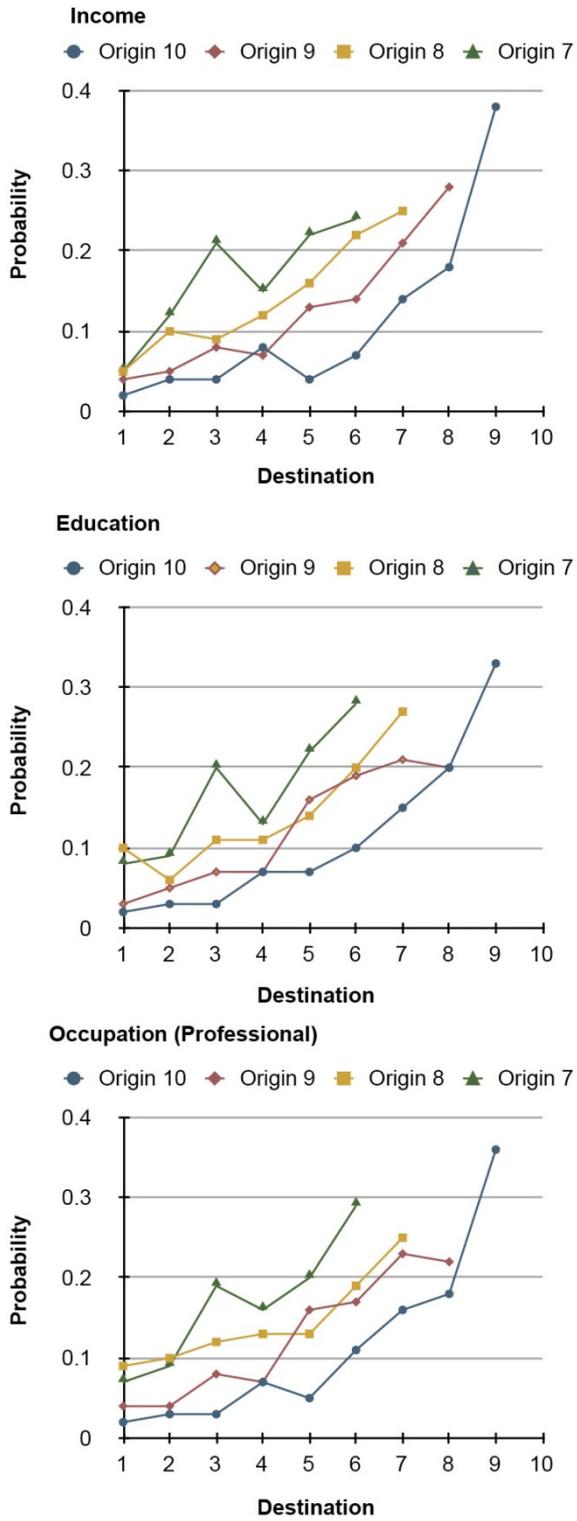


Figure 4: Probability of moving down from the current origin for movers in deciles 10-7.

The final analysis examines the movement behavior around the mid-quintile (deciles 5 and 6). We can think of these middle deciles as the areas which are mostly likely to have middle class households some of whom are younger and forming households and moving up the hierarchy of locations. For these households expanding incomes and greater resources more generally lead to gains in neighborhood quality. At the same time we know from other research that disruptions to family structures, divorce and separation, lead to movements down the hierarchy.

Clearly as the diagram demonstrates individuals with more resources and social capital who are in the mid-deciles (quintile 3) are more likely to move up than to move down if they move out of the mid-quintile (Figure 5). The diagram emphasizes the likelihood of moving to nearby quintiles but overall those with more resources are nearly twice as likely to move to the top quintile as to move down to the lowest quintile. Resources matter and affect the opportunity outcomes but again there is considerable inter-change across the opportunity matrix.

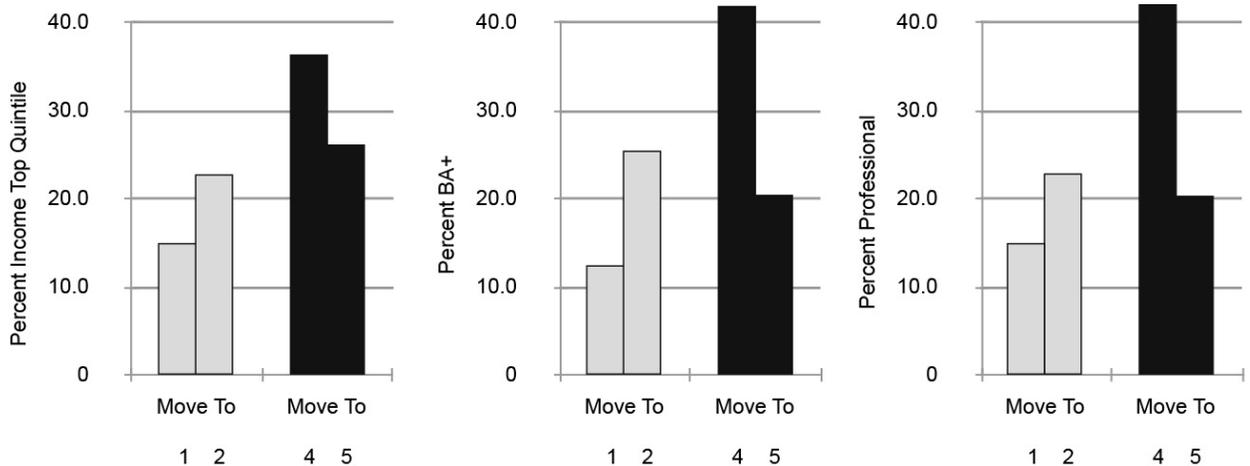


Figure 5: Percent who move out of the mid-quintile and who move to quintiles of advantage/disadvantage above or below the mid-quintile.

(d) Observations on geographic scales

Moves between deciles of advantage and disadvantage restricted to moves only within the five large Australian metropolitan areas are broadly similar to the moves across all deciles but there are three notable differences (Table 4).

First, there is a higher probability of remaining on the diagonal, a lower probability of moving above the diagonal and an increased probability of moving below the diagonal. While 19% moved on the diagonal for the full matrix population 22% moved on the diagonal in the large cities. More striking is the fact that the moves above and below the diagonal were almost balanced for total moves but for movers within the large cities 33.8% move above the diagonal and 44% moved below the diagonal. Second, the matrix for moves in the cities also has significantly higher probability of remaining in the least advantaged deciles and in the most advantaged deciles. In the total matrix slightly more than one third of all moves begin and end in the most advantaged decile, but for moves within the large cities almost 42% originate in and stay in the most advantaged decile. There is a higher probability of moving from 2 to 1 and 3 to 2 than the reverse. This outcome is true of all the  $i < j$  exchanges until the upper part of the matrix where the move from 6 to 7 is greater than the move from 7 to 6 and similarly for the move from 7 to 8 versus the move from 8 to 7. Third, overall, we can interpret these findings of evidence of somewhat greater resilience and less fluidity been for moves in the large cities.

Table 4: Conditional probabilities of moving across the matrix of community advantage/disadvantage for moves within the five large Australian cities

|       | Advantage Scale Destination decile |       |       |       |       |       |       |       |       |            | Total |
|-------|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------------|-------|
|       | Least<br>1                         | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Most<br>10 |       |
| 1     | .3828                              | .1463 | .1283 | .0902 | .0661 | .0701 | .0501 | .0301 | .0240 | .0120      | 499   |
| 2     | .1792                              | .1736 | .1736 | .1189 | .0981 | .0698 | .0510 | .0849 | .0302 | .0208      | 530   |
| 3     | .1280                              | .2133 | .2014 | .1024 | .0922 | .0700 | .0700 | .0648 | .0444 | .0137      | 586   |
| 4     | .0958                              | .1359 | .1568 | .1063 | .0993 | .1098 | .1237 | .0662 | .0627 | .0436      | 574   |
| 5     | .0442                              | .0830 | .1184 | .1060 | .1166 | .1307 | .1007 | .1466 | .1113 | .0424      | 566   |
| 6     | .0654                              | .0673 | .1103 | .0935 | .1383 | .1103 | .1383 | .1252 | .0916 | .0598      | 535   |
| 7     | .0506                              | .0562 | .0742 | .0663 | .1258 | .1360 | .1438 | .1584 | .1191 | .0697      | 890   |
| 8     | .0492                              | .0392 | .0683 | .0753 | .0944 | .0974 | .1145 | .1486 | .1918 | .1215      | 996   |
| 9     | .0270                              | .0308 | .0457 | .0242 | .0727 | .0969 | .1305 | .1267 | .2088 | .2367      | 1073  |
| 10    | .0137                              | .0205 | .0212 | .0335 | .0355 | .0656 | .0827 | .1045 | .2063 | .4167      | 1464  |
| Total | 619                                | 603   | 704   | 548   | 672   | 727   | 798   | 864   | 1025  | 1153       | 7713  |

We can gain some understanding of this outcome in the large cities by examining an additional matrix of interchanges (Table 5). The flows for families, couples with and without children has a different structure than for the overall structure of moves in the large cities. Approximately 20% of the moves are on the diagonal and 44% of moves above the diagonal and 36% below the diagonal. What we are seeing here is the effect of family structure and household composition. Families are more likely on average to make upward gains when they move. In contrast, by subtraction, single persons and single-parent households are not to be able to make those similar advantaged moves. Unlike the matrix for all moves the distribution of families is much more even across all of the deciles.

Again, the likelihood of those above the middle deciles moving up rather than down is striking. For example, the probability of moving from 8 to 9 (.21) is twice that of moving down which is .10. In contrast, the move from 1 to 2 (.15) is marginally smaller than the move from 2 to 1 (.16). This is a reiteration of one of the earlier findings that where you begin does matter in terms of your chances of making gains in status.

The fact that overall in large cities for all individuals there is a significant concentration in the most advantaged areas is of course a response to the fact that large cities attract the educated, professional and top earners, just those able to exploit the advantages of urban living. It is also a response effect in the sense that many of the most expensive neighborhoods are also found in large cities.

Table 5: Conditional probabilities of moving across the matrix of community advantage/disadvantage for family moves within the five large Australian cities

|                    | Advantage Scale Destination decile |       |       |       |       |       |       |       |       |            | Total |
|--------------------|------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|------------|-------|
|                    | Least<br>1                         | 2     | 3     | 4     | 5     | 6     | 7     | 8     | 9     | Most<br>10 |       |
| Origin decile<br>1 | .2918                              | .1492 | .1380 | .1359 | .0891 | .0757 | .0468 | .0379 | .0178 | .0178      | 449   |
| 2                  | .1610                              | .1610 | .1541 | .1455 | .1473 | .0839 | .0599 | .0531 | .0308 | .0342      | 584   |
| 3                  | .0992                              | .1882 | .1966 | .1479 | .0958 | .0924 | .0790 | .0471 | .0437 | .0101      | 595   |
| 4                  | .0778                              | .1206 | .1537 | .1226 | .1304 | .1284 | .1206 | .0720 | .0486 | .0253      | 514   |
| 5                  | .0619                              | .0754 | .0967 | .1219 | .1238 | .1335 | .1103 | .1528 | .1122 | .1161      | 517   |
| 6                  | .0415                              | .0788 | .0871 | .1100 | .1411 | .1183 | .2075 | .1203 | .0664 | .0290      | 482   |
| 7                  | .0246                              | .0692 | .0848 | .0424 | .1272 | .1138 | .1741 | .1518 | .1473 | .0647      | 448   |
| 8                  | .0390                              | .0629 | .0694 | .0629 | .1171 | .0781 | .1085 | .1475 | .2061 | .1085      | 461   |

|       |       |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 9     | .0299 | .0150 | .0424 | .0449 | .0773 | .1172 | .1372 | .1022 | .2020 | .2319 | 401   |
| 10    | .0087 | .0130 | .0087 | .0370 | .0304 | .0522 | .0891 | .0891 | .1913 | .4804 | 460   |
| Total | 421   | 484   | 531   | 496   | 538   | 488   | 546   | 468   | 497   | 442   | 4,911 |

### Measuring and explaining socio-spatial mobility

This paper has provided an in-depth look at the decade long spatial mobility in Australian society 2001-2010. A parallel paper will use the log linear modeling strategy which is often employed to measure the level of interchange across generations, to examine the nature and associations of socio-spatial mobility (Treiman, 2009). Log linear models have been used successfully to test the levels of independence and alternatively the levels of association in the matrix of intergenerational shifts between fathers and sons occupations. A similar approach can be adopted to examine the shifts between Seifa levels. As Treiman (2009) notes, modeling intergenerational mobility has been a lively enterprise and the formal models have applications beyond the study of social mobility.

As a preliminary indication of the direction of this research we provide a series of log linear models of the measures of family status, income, education, occupation and ownership and their association with an increase in Seifa status. Clearly, none of the models, saturated, and limited, adequately fit the data for the moves above the diagonal. Delta, the percent which are miss-classified makes it clear that none of models parsimoniously fits the matrix of moves. It is true that the models which use income and education (ts, es) do get somewhat closer to resource explanations, but it is clear that there is a great deal of unexplained fluidity in the models of movement across deciles of advantage and disadvantage,

| Model                               | Deviance | df | p     | BIC      | Delta |
|-------------------------------------|----------|----|-------|----------|-------|
| [l c t e p o s]                     | 155.97   | 46 | 0.000 | -263.16  | 4.38  |
| [l s] [c s] [t s] [e s] [p s] [o s] | 4656.98  | 81 | 0.000 | 3918.95  | 29.47 |
| [t s]                               | 9084.67  | 91 | 0.000 | 8255.53  | 40.58 |
| [e s]                               | 10849.73 | 91 | 0.000 | 10020.58 | 45.85 |
| [t s] [e s]                         | 6908.62  | 89 | 0.000 | 6097.70  | 37.28 |
| [t s] [p s]                         | 8173.75  | 89 | 0.000 | 7362.82  | 38.74 |
| [t s] [o s]                         | 8537.22  | 89 | 0.000 | 7726.29  | 40.25 |

- l = lone person
- c = couple with child
- t = top quintile
- e = education ba or higher
- p = professional occupation
- o = owner occupied household
- s = seifa increase (above diagonal)

## Conclusions and Observations

Every day people move – they relocate from rental housing to become owners, to be near jobs, to access better schools and to improve the kind of neighborhood in which they live. Matrices of mobility across communities are useful ways of capturing the amount of movement and of the extent of social fluidity in our communities. We see from this analysis that where you are, is likely to be where you will be. There is long term resilience in the structure of flows within and across communities. Still, the study also shows that across these quite different contexts there are significant probabilities of moving and the moves are largely balanced between moving up and moving down. That a lot of the moves are on the diagonal or in contexts close to the diagonal speaks to the resilience in the matrix, but the equally large number of moves off the diagonal speaks to the continuing fluidity in the matrix and society. While we would not expect all the cells to be populated equally, we are able with this analysis to measure just how much movement there is within the system, and whether or not there is overall advantage in the movement, and whether the flows are creating concentrations of disadvantage and advantage.

We believe that the results from this study come down on the side of a continuing matrix of opportunities and the study reiterates that the matrix is well populated across the cells which speaks to the wide variety of opportunities (measured in decile terms) that are sought and realized by individuals moving across varying neighborhoods and communities in Australia. We also show that where you are does influence your opportunities to move up and to make gains in the kinds of neighborhood in which you live. The probability of moving up declines with distance in decile terms from your origin.

We also showed that resources, status and occupation do have an impact on the probability of moving to a more advantaged neighborhood represented by a higher decile. At the same time we have been at pains to emphasize that those probabilities are not high, and that there is considerable movement across the matrix by both advantaged and less advantaged individuals. It also seems that family status matters, more stable family relationships do yield a greater likelihood of being in and moving to higher status deciles.

We utilized inter-generational social mobility as our context and we believe these results are a nice parallel with the social mobility studies. Clearly, socio-spatial mobility and opportunity exist just as there is opportunity across inter-generational mobility. From the analysis in this paper we would argue that those who emphasize the polarization of society may be overstating their case.

There is considerable connection across the decile structure and the lowest decile is not isolated from the urban structure as a whole in Australia.

## References

- Andersson, R. and A. Brama (2004). "Selective migration Swedish distressed neighbourhoods: can area-based urban policies counteract segregation
- Andrews D and Leigh A. 2009 More inequality, less social mobility. *Applied Economics Letters* 16, 1489-1492
- Bailey, N and Livingston, M (2007) Population Turnover and Area Deprivation Bristol, UK The Policy Press (Joseph Rowntree Foundation).
- Beller, E. and Hout, M. (2004) Intergenerational social mobility: the US in comparative perspective *The Future of Children* 16, 19-36
- Black, D. Kalb, G. and Kostenko, W. (2009) Location Economics: Spatial Mobility and Social Exclusion University of Melbourne: *Melbourne Institute of Applied Economic and Social Research*
- Boheim, R Taylor M. 2002. Tied down or room to move? Investigating the relationship between housing tenure, employment status and residential mobility in Britain. *Scottish Journal of Political Economy* 49, 369-392.
- Bolt, G. and R. Van Kempen (2003). "Escaping poverty neighbourhoods in the Netherlands." *Housing Theory and Society* 20: 209-222.
- Bolt, G., R. van Kempen, et al. (2008). "Minority ethnic groups in the Dutch housing market: spatial segregation, relocation dynamics and housing policy." *Urban Studies* 45: 1359-1384.
- Cabinet Office ( 2011). *Opening Doors, Breaking Barriers: A Strategy for Social Mobility*. London.
- Causa , O. and Johannsson, A. (2005) Intergenerational social mobility. OECD Economics Department, Workign Paper 707.
- Cheshire, P. C., V. Monastiriotis, et al. (2003). Income inequality and residential segregation: labour market sorting and the demand for positional goods. *Geographies of Labour Market Inequality*. R. Martin and P. S. Morrison. London, Routledge: 83-109.
- Cheshire, P. (2012) Are mixed community policies evidence based? A review of the research on Neighborhood Effects. In Van Ham, M. Manley, D. Bailey, N. Simpson, L. McLennan, D. (Eds) *Neighborhood Effects Research: New Perspectives*. Dordrecht, Springer.
- Clark, W.A. V. and Morrison, Philip (2012) Socio-spatial mobility and residential sorting: evidence from a large scale survey. *Urban Studies* 49, 3253-3270.

- Clark, W.A.V. and Rivers, N. (2012) Community Choice in Large Cities: Selectivity and Ethnic Sorting Across Neighborhoods. In *Understanding Neighbourhood Dynamics: New Insights for Neighbourhood Effects Research*, edited by Maarten Van Ham, David Manley, Nick. Bailey, Ludi. Simpson, and Duncan Maclennan. Dordrecht, The Netherlands: Springer: 253-277
- Clark, W.A.V. (2012) Moving and staying in Los Angeles: Money matters but so does family composition. *Cityscape*. Fall
- Clark, W.A.V. Van Ham, M. and Coulter, R. (2012) Spatial mobility and social outcomes. Working paper, CCPR, UCLA.
- Ganzeboom, H. Luijkx, R and Treiman, D. (1989) Intergenerational mobility in comparative perspective. *Research in Social Stratification and Mobility* 8: 3-84
- Gramlich, E., D. Laren, et al. (1992). "Moving into and out of poor urban areas." *Journal of Policy Analysis and Management* 11(2): 273-287.
- Hauser, R. and Warren, J. (1997) Socio-economic indices of occupation: A review update and critique *Sociological Methodology* 177-298. Cambridge Basil Blackwell,
- Hauser, Robert M., Jennifer T. Sheridan, and John Robert Warren. 1999. "Socioeconomic Achievements of Siblings in the Life Course: New Findings from the Wisconsin Longitudinal Study." *Research on Aging* 21:338-378.
- Herscovitch, B. 2013 *A Fair Go: Fact or Fiction*. St Leonards, NSW, Center for Independent Studies, Policy Monograph 135.
- Leigh, A. (2007) Intergenerational mobility in Australia, *The B.E. Journal of Economic Analysis & Policy*. 7(2)
- Morrison, P.S., & Nissen, K. (2010). Moving in and out of areas of deprivation: evidence from the New Zealand census. *New Zealand Population Review*, 36, 55-80.
- OECD (2010) *A Family Affair: Intergenerational social mobility across the OECD*. Chapter 5. Economic Policy Reforms, Going for Growth.
- Power, A. and J. W. Wilson (2000). Social exclusion and the future of cities. CASE Paper 35. London Centre for Analysis of Social Exclusion
- Rabe, B. Taylor, M., 2010. Residential mobility, quality of neighborhood and life course events. *Journal of the Royal Statistical Society: Series A* 173, 531-555.

- Ryan and Wheeler, 2010 *Locational disadvantage, socio-economic status and mobility behaviour – evidence from Australia*. Social Policy Evaluation Analysis and Research Centre, Research School of Economics College of Business and Economics The Australian National University
- Quillian, L. (2003). "How long are exposures to poor neighbourhoods? The long-term dynamics of entry and exit from poor neighbourhoods." *Population Research and Policy Review* 22(3): 221-249.
- Salmond, C. and P. Crampton (2001). "NZDep96: What does it measure?" *Social Policy Journal of New Zealand* 17: 82-100.
- Schaake, K., Burgers, J. and Mulder, C. (2009) Ethnicity at the individual and neighborhood level as an explanation for moving out of the neighborhood, *Population Research and Policy Review*, 29, pp. 593–608.
- South, S. J., K. Crowder, and Chavez, E. (2005). "Exiting and entering high-poverty neighbourhoods: Latinos, Blacks and Anglos compared." *Social Forces* 84(2): 873-900.
- South, S. J. and K. D. Crowder (1997). "Escaping distressed neighbourhoods: individual, community, and metropolitan influences." *American Journal of Sociology* 102(4): 1040-1084.
- South, S.J. Pais, J. and Crowder, K. (2011) Metropolitan influences on migration into poor and non- poor neighborhoods. *Social Science Research* 40: 950-964
- Townsend, P. (1979). *Poverty in the United Kingdom*. London, Allen Lane and Penquin Books.
- Treiman, D. (2009). *Quantitative Data Analysis: Doing Social Research to Test Ideas*. San Francisco, Jossey Bass.
- Van Ham, M. and P. Feijten (2008). Who wants to leave the neighbourhood? The effects of being different from the neighbourhood population on wishes to move." *Environment and Planning A* 40(5): 1151-1170.
- White, P., J. Gunston, J. Salmond, C. Atkinson, J. and Crampton, P. (2008). *Atlas of socioeconomic deprivation in New Zealand NZDep2006*. Wellington Ministry of Health.

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