

Final report

Location Economics: Spatial Mobility and Social Exclusion

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List of Abbreviations

ABS: Australian Bureau of Statistics

A.C.T: Australian Capital Territory

ARIA: Accessibility/Remoteness Index of Australia

ASCO: Australian Standard Classification of Occupations

ATSI: Aboriginal and Torres Strait Islander

DEEWR: Department of Education, Employment and Workplace Relations

DSP: Disability Support Pension

ESB: English Speaking Background

FaHCSIA: Families, Housing, Community Services and Indigenous Affairs

HILDA: Household, Income and Labour Dynamics in Australia

LDS: Longitudinal Data Set

LFSR: Labour Force Statistical Region

NESB: Non-English Speaking Background

N.S.W: New South Wales

N.T: Northern Territory

PPP: Parenting Payment Partnered

PPS: Parenting Payment Single

QLD: Queensland

RED: Research and Evaluation Database

S.A: South Australia

SEIFA: Socio-Economic Indexes for Areas

TAS: Tasmania

VIC: Victoria

W.A: Western Australia

Executive Summary

The research questions

This report conducts some exploratory analyses into the role of social exclusion in location choices and discusses the effect it may have on labour market outcomes. The basis for this investigation is the concern that a concentration of advantaged/disadvantaged groups in particular areas may give rise to externalities which affect the opportunities, behaviour and well-being of the local population.

Five questions are central to this report:

1. Does the level of social disadvantage in an area, as measured by the Socio-Economic Indexes for Areas (SEIFA)¹, affect the choice of location?
2. What factors affect the choice of living in areas of various SEIFA levels?
3. Are people living in areas of different SEIFA levels driven by different reasons when they move?
4. When people move, what factors make them move socially downward or upward (in terms of SEIFA level)?
5. What are the labour market outcomes resulting from spatial mobility and the associated changes in social disadvantage?

This report builds on a previous research project by Black *et al.* (2008) which examined the issue of location economics.

Two separate data sets are used to consider the five research questions. First, income support administrative data developed by DEEWR and based on the records of Centrelink, the Research and Evaluation Database (RED), are used to analyse the behaviour of income support recipients. In addition, six waves of the Household, Income and Labour Dynamics in Australia (HILDA) Survey data are used to provide a benchmark for the behaviour of the general population, which then enables us to assess how different income support recipients may be from the general population.

The central variable in this report is mobility, which is defined as a change in residency postcode of the individual or income unit.² A conditional logit model is estimated to analyse

¹ SEIFA is an index of social advantage and disadvantage, whereby a low SEIFA value indicates lower social and human capital in an area. See Australian Bureau of Statistics (ABS) (2004, 2008) for more information.

the location choices that are made by individuals. In addition, a range of simultaneous models, which allow for correlation between unobserved individual heterogeneity, are estimated using combinations of probit and ordered probit equations to analyse the mobility decision and employment outcomes.

Main findings

The econometric analyses outlined above are used to consider the five key research questions of this investigation. Before reporting the findings of this report in relation to these research questions, we first provide a brief overview of the observed mobility trends.

Over the period 2002 to 2008, mobility of income support recipients has slowly declined in a continuation of the trend observed in Black *et al.* (2008) from 1995 onwards. This is partly due to a decrease in the proportion of unemployment-related benefit recipients and partly due to a decrease in mobility of this high-mobility group. Income support recipients living in Western Australia, Queensland and the Northern Territory are somewhat more mobile than those living in the other States, with Queenslanders being the most mobile. Areas with higher SEIFA scores contain more mobile income support recipients, although the difference in average SEIFA score of movers versus non-movers is fairly small. Between 2002 and 2008, average SEIFA scores have decreased slightly both for movers and non-movers amongst the income support recipients. The HILDA shows that compared to the general population, income support recipients live in lower SEIFA areas.

Women are less mobile than men and single persons are more mobile than partnered persons. Those who change marital status are more likely to move, independent of whether they are newly partnered or separated. Families with school-age children are less likely to move, possibly due to a desire to avoid changes of school for their children. These effects are observed amongst the general population and income support recipients.

Individuals from an Indigenous background are more likely to move and Non-English Speaking Background (NESB) migrants appear less likely to move than other groups. The analyses based on both data sets indicate that younger age groups are more likely to move than older age groups.

Women on unemployment-related benefits are less likely to move than other women. Women on Parenting Payment Single (PPS) without work requirements are more likely to move.

² An income unit could be a single individual, a single parent family with dependent children, or a couple family with or without dependent children.

Principal carers of children in receipt of an activity-tested benefit are slightly less likely to move compared to other types of income support recipients and principal carers receiving non-activity-tested benefits. A change in benefit type (only observed in RED) increases the probability of a move.

We now turn to the five key research questions. For each research question, the findings from these analyses are briefly presented below.

1 Does the level of social disadvantage in an area affect the choice of location?

Income support recipients and the general population are affected differently by the level of SEIFA in their choice of location. Income support recipients are more likely to choose low SEIFA areas, whereas the general population is more likely to choose high SEIFA areas. There appears to be some self-selection into areas of different SEIFA levels. Low SEIFA areas are more likely to offer low-cost housing than high SEIFA areas, which makes these areas more attractive to low-income households such as income support recipients.

The main factor in selecting a location to live is the distance from the current location. The most likely outcome is to remain at the current location, and if a decision to move is made it is more likely to be closer rather than further. It is interesting to observe that capital cities do not appear to be more attractive than locations outside the capital cities, and for the general population aged between 30 and 60, capital cities appear less likely to be chosen than other locations. For income support recipients, this effect is less strong.

Economic conditions play a relatively limited role in the location choice. Median house and unit prices in a region have no significant effect on the location decision amongst the general population, except for a counterintuitive positive effect of unit prices on male homeowners. A similar positive effect of unit prices is observed for income support recipients together with a negative effect of house prices on male and female income support recipients. The local unemployment rate and the number of skilled job vacancies are only significant for male income support recipients, indicating a higher probability of choosing low unemployment and high vacancy areas. In the general population, high vacancy numbers have no effect for men, but appear to have some effect for women. Women who were employed in a skilled job last year were more likely to choose a location with more skilled vacancies and fewer unskilled vacancies. Women who received benefits in the previous period were more likely to choose a location with more unskilled vacancies. Finally, women aged between 30 and 39 were less likely to choose a location with more skilled vacancies.

2 What factors affect the choice of living in areas of various SEIFA levels?

Individual characteristics which appear important:

- Homeowners tend to be found in higher SEIFA areas, possibly reflecting higher levels of homeownership in high SEIFA areas. This is possibly due to higher income households being more likely to be able to buy a home and to prefer high SEIFA areas over low SEIFA areas.
- Amongst income support recipients, private renters are slightly more likely to live in areas with higher SEIFA levels than renters in Public Housing. This may be due to the distribution of Public Housing over different locations, favouring low SEIFA areas.
- Individuals with higher levels of education are more likely to be found in high SEIFA areas, which is likely to be linked to income levels. Similarly, there is a higher probability of high-skilled workers and a lower probability of benefit recipients living in high SEIFA areas. Again, this is likely to be linked to income levels.
- After controlling for other characteristics in the multivariate analyses, NESB migrants in the general population are more likely to live in high SEIFA areas than the Australian-born and English Speaking Background (ESB) migrants, whereas NESB migrants on income support are much less likely than Australian-born income support recipients to live in high SEIFA areas. In the descriptive analyses, the NESB group in both populations is found to be much more likely to live in the lowest two deciles, while at the same time also being slightly more likely to live in the two top deciles. That is, this group is underrepresented in the mid-level SEIFA areas. Australian-born and ESB migrants are more likely to live in higher SEIFA areas. It appears that the tendency of NESB migrants in the general population to live in low SEIFA areas is explained to a large extent by other characteristics of NESB migrants, such as education level.
- Individuals from Aboriginal and Torres Strait Islander (ATSI) descent are less likely to live in high SEIFA areas (this is one of the strongest effects in the models). They are also more likely to move and when moving they move down or remain at the same level. This is observed in both data sets, except for couple families at the lowest SEIFA level in HILDA.
- Income units receiving benefits are more likely to live in lower SEIFA areas. As mentioned above, this is likely to be related to the higher affordability of low-SEIFA

areas. Amongst benefit recipients, PPS recipients without work requirements are more likely to live in lower SEIFA areas, and PPS female recipients and Parenting Payment Partnered (PPP) recipients with work requirements are more likely to live in higher SEIFA areas. The effect for single parents may be due to divorced single parents who remain living in the family home after the divorce.

- There is a tendency for older people to be more likely to live in a high SEIFA area, except for the single individuals in HILDA. The latter exception is likely to be caused by young individuals still living with their parents.

Area characteristics which appear important in relation to the SEIFA level:

- Public transport appears to be of better quality in high SEIFA areas, as reflected by the proportion of the population that uses public transport to travel to work.
- High SEIFA areas are associated with a larger number of skilled job vacancies and a smaller number of unskilled job vacancies.
- Capital cities are more likely to contain high SEIFA areas and more remote areas are less likely to contain high SEIFA locations.

3 Are people living in areas of different SEIFA driven by different reasons when they move?

There is no evidence of this. An attempt to estimate separate models for individuals living in areas with different SEIFA levels (bottom two deciles, middle six deciles and top two deciles) did not result in significantly different effects.

Queensland, Western Australia and Northern Territory have a higher mobility than the other States, but the differences are not very large. Similarly the SEIFA level does not appear to be very different between income support recipients who never move, those who move twice and those who move at least three times. Only those who move once per year live in areas of slightly higher SEIFA.

The HILDA data allows us to observe the reasons for moving directly. Appendix Table A.1 lists the aggregated categories and the specific reasons these contain. Lifestyle is the most important reason to move for singles living in middle or high SEIFA areas, whereas family is the most important reason for singles in low SEIFA areas. Couples in all SEIFA areas who move up or remain at the same SEIFA level are most likely to move to upgrade their house to a more expensive one. The second-most named reason for this group is lifestyle. Couples who move down in SEIFA level (from middle or high SEIFA areas) are most likely to move for

lifestyle reasons (followed by job-related reasons). Compared to couples, singles are much more likely to move for family reasons. Finally, for both singles and couples, compared to individuals living in low SEIFA areas, those living in middle and high SEIFA areas appear more likely to move for job-related reasons.

4 When people move, what factors make them move socially downward or upward?

From our analyses of the characteristics available in the data used, no clear patterns have appeared. Amongst income support recipients, young individuals (15 to 19 years of age), private renters and NESB migrants appear slightly more likely to move up in SEIFA level.

5 What is the labour market outcome resulting from spatial mobility?

Mobility in itself has no positive effect on labour market outcomes. In fact, the direct effect appears negative, with any positive association caused by the fact that the characteristics of individuals who move also make it more likely for these individuals to find employment (independent of whether they move or not). This is a similar result to Bill and Mitchell (2006) who used the first three waves of the HILDA Survey. They showed that those who are unemployed are more likely to move than those who are employed, but that moving does not assist in obtaining employment after controlling for selection into moving and controlling for moving due to obtaining a job. However, our report has found economic circumstances (as reflected by the number of job vacancies and unemployment rate) to be important for labour market outcomes in all analyses. That is, mobility to an area with a higher number of unskilled job vacancies and a lower unemployment rate may improve an individual's probability of re-employment or increased earnings. The effect of unskilled job vacancies may be due to the, on average, low skill and education levels of non-employed individuals. That is, they are much more likely to be hired for an unskilled job than a skilled job.

Examining other factors that affect labour market outcomes, we find the following. Men and women on income support are less likely to find employment than others in the general population. Amongst income support recipients in RED, those on unemployment-related benefits, or on PPS or PPP with work requirements are most likely to experience an increase in earnings (with the latter two groups being less likely to move), followed by those on PPS or PPP without work requirements. For women, the effects on earnings for those on PPS with and without work requirements are very similar. A change in benefit type (only observed in RED) increases the probability of increased earnings for men.

Examining the effect of individual characteristics on the probability of employment or increased earnings we find the following. Those who are newly partnered are more likely to have increased earnings. Individuals from an Indigenous background are less likely to experience increased earnings than other Australian-born individuals or migrants. This is most clear from the RED. Most likely due to the small sample size the negative effect on employment is only evident for women in HILDA, while all other effects remain insignificant. To a lesser extent NESB migrants are also less likely to experience increased earnings (with effects in HILDA remaining insignificant although indicating a negative effect as well). Finally, the analyses based on both data sets indicate that younger age groups are more likely to become re-employed or experience increased earnings, compared to older age groups.

Potential policy implications

In this subsection of the Executive Summary, we aim to interpret the results observed in our analyses in the light of potential policy issues. Many of the results reported under the main findings cannot be easily translated into policy implications. For example, just knowing that the Indigenous population is disadvantaged is not sufficient. We need to determine what factors are associated with better outcomes for this group to be able to design helpful policies. The data used in this report, however, is not detailed enough to enable such an in-depth analysis into this specific issue.

Nevertheless, a few issues appear important from the analyses in this report. Combining the finding on low mobility of income support recipients who are Public Housing renters and the significance of employment opportunities in the area of residence (as measured by the unemployment rate and vacancies for unskilled workers), the location of Public Housing appears relevant. The importance of this issue is heightened by a further finding which seems to indicate a lower accessibility of areas of lower SEIFA, as measured by the use of public transport. Thus, location of Public Housing and accessibility of low SEIFA areas may affect access to jobs in nearby areas and limit the number of available jobs for this group of income support recipients. Another issue of potential importance related to Public Housing is the somewhat lower probability of experiencing increased earnings compared to private renters. An important policy question is whether this is due to the location of Public Housing or due to a means test on income to remain eligible for Public Housing.

Despite the importance of employment opportunities for the probability of re-employment following a move, job-related reasons are reported as only the third most important reason to move for individuals (as reported in the HILDA survey). Instead, lifestyle (including an upgrade to a more expensive house) and family are much more frequently named reasons to move house. This result prevails across different groups of individuals, for example income support recipients versus those who receive no income support (see Black *et al.* 2008) or those living in low SEIFA areas versus those living in high SEIFA areas, although income units living in middle and high SEIFA areas appear somewhat more likely to move for job-related reasons than income units living in low SEIFA areas. When seeking to encourage individuals, particularly income support recipients, to move to areas with greater employment opportunities, these main reasons to move need to be taken into account.

There is no clear evidence that the SEIFA level of an area has a direct effect on the probabilities of re-employment or increased earnings for individuals. The coefficient on the average SEIFA score in the increased earnings equation is negative for male income support recipients, but for women the effect is much smaller and insignificant. However, specific factors associated with a low SEIFA level, such as mentioned above, may affect re-employment probabilities. Therefore, it seems important when designing new policies to focus on specific attributes of low SEIFA areas, such as employment or accessibility, that may affect individuals' employment opportunities or opportunities to participate in society more broadly.

It is found that having a non-employed partner decreases the individual's own employment probability. This appears to be a link to the issue of jobless households, where none of the adults in a household are employed. A further finding is that individuals who have been non-employed for a longer period of time are less likely to become employed again. Both these findings indicate that despite the good labour market conditions at the time of the survey, there remains a group of individuals potentially at risk of becoming long-term unemployed. Such long-term unemployment can be a pathway to serious disadvantage and social exclusion.

A final issue of relevance is the effect of the recent Global Financial Crisis on the general population and, in particular, income support recipients. At present, we cannot assess this with our data, since these did not include the period in which the Global Financial Crisis started. However, this is an issue that we can potentially investigate in the future as the data become available.

1. Introduction

The aim of this study is to extend a previous report on location economics (Black *et al.*, 2008) and take into account the issue of social exclusion. ‘Social exclusion’ is defined as the exclusion of individuals and groups from the mainstream activities of a particular society. For developed countries, especially those in the European Union, it has become a priority to combine a dynamic economy with social inclusion. The concept of social exclusion suggests a distinctly multidimensional view of disadvantage, including financial resources, education, employment, health, housing and social participation (Atkinson *et al.*, 2002). Nevertheless, Somerville (1998) suggested that the core meaning of social exclusion is connected to social isolation and social segregation, and so an analysis of social mobility (or the lack of it) is crucial to understanding the content and extent of social exclusion. This issue of social exclusion appears to be a relevant for Australia; for example, Gregory and Hunter (1995a, b) show that there are substantial area and neighbourhood inequalities present within Australia. Presumably, space may have been a significant dimension in structuring social and economic inequality. A major concern, therefore, is whether spatial mobility will widen neighbourhood inequalities and whether, as a result, these inequalities are in some sense self-reinforcing.

In this study we use the same data sets as the previous report – namely, the Household, Income and Labour Dynamics in Australia (HILDA) Survey data and income support administrative data. A minor difference is that the previous report used the Longitudinal Data Set (LDS) from the Department of Families, Housing, Community Services and Indigenous Affairs, whereas in this report the Research and Evaluation Database (RED) developed by the Department of Education, Employment and Workplace Relations is used. Both data sets, however, are based on the same underlying income support administrative data from Centrelink.

The results from the previous report by Black *et al.* (2008) provide a useful overview of the spatial mobility observed among income support recipients and the general population in Australia. Descriptive results suggested that mobility rates, on average, tend to be higher among income support recipients relative to non-recipients. Further, relative to non-recipients, individuals on income support tend to be female, single, older, have lower education levels, and are more likely to be a migrant from a non-English speaking background or from an Indigenous background. With respect to the characteristics of individuals choosing to move, summary statistics indicated that such persons tend to be younger, single, and are less likely

to be from a non-English speaking migrant background or have older (school-aged) children. The reasons given for moving residence were common across both the income support recipient and non-recipient populations, with improved lifestyle and family or personal reasons cited as principal factors in the majority of cases. The LDS indicates that mobility among income support recipients has steadily decreased since 2001. This decline is partly due to the decrease in the proportion of unemployment-related payment recipients (the most mobile group of recipients) amongst all recipients, and it is reinforced by a general decrease in mobility amongst unemployment-related payment recipients and Parenting Payment Single recipients.³

Multivariate analyses revealed that certain characteristics such as a younger age, having no children (in particular not of school-age), being single, having a history of moving, living in rented accommodation and not owning (or paying off) a home increased the likelihood of moving within both the income support recipient and non-recipient populations. In addition, the circumstances behind previous moving decisions were found to influence subsequent mobility levels. The multivariate analyses showed that, overall, after controlling for a wide range of characteristics income support recipients were in fact no more mobile. However, a more detailed model for the recipient population in isolation revealed that mobility was higher among NewStart Allowance recipients. This was confirmed in analyses using LDS, where it was found that those on unemployment-related payments were more likely to move than the recipients of other payment types. The LDS analyses also showed that recipients with earned or unearned income were less likely to move.

For their choice of location, the income support recipients in HILDA and LDS appear to be unaffected by unemployment rates. In contrast, median housing prices have the expected effect (whereby higher prices discourage individuals from locating in a region), but median unit prices (which were collected separately from the housing prices) have the opposite effect. This result is found in both data sets, although it is not significant in all cases. The factor found to be most important in the location decision is whether a move is required to make that choice, and the distance involved in the required move. The necessity of a move, particularly when the new location is further from the old location, has a negative effect on the probability of choosing that location.

³ Unemployment-related income support recipients include NewStart Allowance, Mature Age Allowance and Youth Allowance (Other) recipients.

Independent of the reason for moving, Black *et al.* (2008) found that spatial mobility had no significant effects on the probability of employment for individuals observed in HILDA who were not employed and receiving income support in the previous period. The unemployment rate had a negative effect on the probability of employment, but was only significant for men. Using LDS, mobility was found to have a very small positive significant effect on the probability of employment when a range of interaction effects with mobility were also included in the models. The first of these interaction effects was included to examine the effects of those who were employed in the previous period separately. It was found that a large negative effect from moving on the probability of employment arose when people who were employed moved location. The second set of interaction effects was included to differentiate between those moving to a location with higher unemployment rates and those moving to an area with lower unemployment rates (defined as areas with rates that are at least one percentage point higher or lower than the rate in the starting location). People moving to an area of higher unemployment were less likely to be employed as a result of the move. For other groups, there appeared to be a very small positive effect. As expected, due to the requirement to look for work, individuals receiving NewStart Allowance were more likely to be employed after one year.

This finding that spatial mobility had little, if any, effect on subsequent labour market outcomes was consistent with the results from the descriptive analysis, which found that most people moved for non-labour market related reasons and that the number of income support recipients who moved to areas with lower unemployment rates was about the same as the number of recipients who moved to areas with higher unemployment rates.

Returning to the present study, any consideration of social exclusion inevitably raises the question of whether there exists an ‘underclass’ group in society. Compared to the general population, income support recipients are a relatively vulnerable group in society, in terms of income, education and skills, and so they may constitute such an ‘underclass’ group. It is important, therefore, that we are able to examine and compare these two groups. For this reason we use two main data sources: HILDA to study the general population, and RED to study income support recipients.

The first part of this report investigates spatial mobility and its relationship with social exclusion. The following research questions are raised:

1. Does the level of social disadvantage in an area, as measured by the Socio-Economic Indexes for Areas (SEIFA)⁴, affect the choice of location?
2. What factors affect the choice of living in areas of various SEIFA levels?
3. Are people living in areas of different SEIFA levels driven by different reasons when they move?
4. When people move, what factors make them move socially downward or upward (in terms of SEIFA level)?

The second part of the report is concerned with the labour market outcomes that result from spatial mobility and any associated social mobility. As such, we consider whether spatial mobility and any changes in social disadvantage that arise from this mobility affect the labour market outcomes of individuals. These analyses are based on the assumption that a concentration of advantaged/disadvantaged groups in particular areas may give rise to externalities which affect the opportunities, behaviour and well-being of the local population.

Given the extensive number of research questions and analyses proposed for this report, and the largely exploratory nature of the analyses conducted, the scope of the report has been kept fairly broad. As a result, there are no analyses of subgroups in the population except for the distinctions between men and women and between single adults and couple families. Despite this, the report contains a large number of tables, each of which presents a great deal of information. We aim to discuss such information comprehensively in the two results sections, and then summarise this in the General Discussion and Executive Summary sections.

The report proceeds as follows. The HILDA and RED data used are discussed in Section 2, along with some descriptive statistics. The development of the conceptual models and the advanced econometric methodologies required to answer the questions posed in this report are outlined in Sections 3 and 4. In particular, Section 3 focuses on the research questions listed under the first part of the report which relate to location choice and the role of social exclusion in location decisions. The proposed analyses regarding the effect of mobility on labour market outcomes are discussed in Section 4. Sections 5 and 6 then present the results from the analyses described in Sections 3 and 4 respectively. A general discussion is presented in Section 7 to bring together the large number of analyses and findings in this report.

⁴ See Australian Bureau of Statistics (ABS) (2004, 2008).

2. Data Sources

In this report we base our analyses on two main sources of data. The first is the Household, Income and Labour Dynamics in Australia (HILDA) Survey data, which is a household panel survey that is designed to collect information from a sample representative of the general Australian population. The second main data source is the Research and Evaluation Database (RED), which contains information on all individuals who had received an income support payment between 1st July 1998 and 27th June 2008. Each of these data sources has its own advantages and disadvantages for our examination of spatial mobility and social exclusion – for instance, HILDA contains a vast array of individual and income unit characteristics on a sample from the general Australian population, but its sample size can sometimes be a limitation; whereas, RED contains the full population of income support recipients, but only a limited amount of descriptive information on these individuals.⁵

To supplement these main data sources we also incorporate data on the characteristics of the geographical regions within Australia from other sources. In particular, using the postcode information in HILDA and RED we link the following information: median house and unit prices by postcode and year from Australian Property Monitors; unemployment rates and population sizes by ABS statistical regions and year from ABS Labour Force Survey data; measures of Socio-Economic Indexes for Areas (SEIFA); method of travel to work and proportions of migrants by postcode for 2001 from ABS data (based on ABS Census 2001); and job vacancy rates and Accessibility/Remoteness Index of Australia (ARIA) information by postcode and year from DEEWR.

In the following subsection, we describe the SEIFA measure which is used throughout this report to quantify the issue of social exclusion. The two subsections thereafter more closely consider our two main data sources, and present some descriptive analyses of spatial mobility and social exclusion.

2.1 Measures of Socio-Economic Indexes for Areas (SEIFA)

SEIFA is an index of social advantage and disadvantage, whereby a low SEIFA value indicates lower social and human capital in an area. Both SEIFA 2001 (based on ABS Census 2001) and SEIFA 2006 (based on ABS Census 2006) are potentially relevant to the analyses presented in this report, since HILDA (2001-2006) and RED (1998-2008) are the data sources

⁵ An income unit could be a single individual, a single parent family with dependent children, or a couple family with or without dependent children.

examined. In order to decide on whether we should use both SEIFA measures, we first list the reasons that could lead to differences between SEIFA 2001 and SEIFA 2006 for an area: (i) attributes of the area have not changed, but its relative position has changed due to changes in other areas; (ii) area boundaries changed; (iii) actual SEIFA measure changed. The only change that we would be interested to include in the analyses is the last one listed under (iii). That is, in our modelling, we want to avoid changes in SEIFA which are due to a change in SEIFA year only. In addition, it is our opinion that SEIFA as a measure should be quite stable over time, so that five years are not expected to bring noticeable changes. Based on these considerations, SEIFA 2001 is used for all waves in HILDA and all years in RED. It seems unlikely that substantial changes have occurred over our 9-year observation period, especially given the long-term nature of regions displaying signs of social exclusion. Aspects of social exclusion do not appear overnight, but are usually long-term processes, where small changes accumulate over a long period of time.

The Australian Bureau of Statistics (ABS) provides four types of SEIFA measures: index of relative socioeconomic disadvantage; index of relative socioeconomic advantage and disadvantage; index of economic resources; and, index of education and occupation. After considering the variables involved in the construction of each index, we believe that the index of relative socioeconomic disadvantage is the most appropriate for looking at “the culture of poverty”. The reason for this is that it mainly identifies areas with low income, high unemployment, poor education, poor English-language skills, and large proportions of unskilled workers and persons of Aboriginal descent.

SEIFA is an index that summarises the disadvantage experienced by residents in an area on average. As a result, low and high SEIFA areas still display a fair amount of socio-economic heterogeneity, though low SEIFA areas have larger proportions of the population on low income, in unemployment and at low skill levels. The remaining heterogeneity means that although income support recipients are more likely to live in a low SEIFA area, there are recipients who are exceptions and who live in middle or high SEIFA areas. Conversely, the same is true for high-income, well-educated individuals. Due to this variation, we can, for example, examine the effect of living in a disadvantaged area versus living in a more advantaged area on the employment outcomes of income support recipients.

In the ABS data on SEIFA measures, each postcode is associated with its own SEIFA value. A possible limitation for our analyses which estimate the effect of the SEIFA variable is that no account is taken of the fact that some individuals may live close to the boundary of two

postcodes. This is likely to be less important in rural regions where postcodes are large areas than in metropolitan regions where the distance from one postcode to the next (or even the distance to two or three other postcodes) can be relatively small. Accessibility of employment and services is a key factor in determining advantage and disadvantage.

2.2 The HILDA Data

For the analyses in this report we use the first six waves (or years) of the HILDA Survey data⁶. As outlined in the previous report Black *et al.* (2008), the HILDA data contains a sufficient number of individuals receiving income support to enable comparisons between this group and the general Australian population. Throughout our examination of the HILDA data we restrict our focus to persons aged between 15 and 64 years who are not studying full-time.

To consider the primary theme of this report – spatial mobility and social exclusion – we begin by looking at the characteristics of individuals by the SEIFA level in their area of residence, and by whether or not they move residence between years. For those who move residence, we also consider the change in SEIFA level which resulted from the move. In each of these analyses using HILDA we present information for single (or non-partnered) individuals and couples (married or de facto individuals) separately, since the decision to move is assumed to be made by the couple jointly and is influenced by characteristics of both partners and their income unit characteristics, rather than each individual in the couple separately.

Tables 1 and 2 highlight some clear differences in characteristics across SEIFA deciles for both single individuals and couple families. For instance, the lowest two deciles are more likely to contain persons from Aboriginal and Torres Strait Islander (ATSI) descent and Non-English Speaking Background (NESB) migrants (although this group is also slightly more likely to live in the top two deciles compared to being in the middle SEIFA areas), less educated persons, income support recipients and those not currently employed. Whereas, the highest two deciles are more likely to contain highly educated persons and skilled workers, homeowners, and persons not receiving any income support. In terms of age, the highest two deciles are more likely to contain older couples (where the male is aged between 40 and 64 years), whilst for single individuals the highest two deciles contain a large group aged 20 to 29 years. This observation is likely the result of young singles who continue to reside in their

⁶ In particular, we use the confidentialised unit record files from HILDA Survey data Waves 1 to 6 (Version 6.0), January 2008. For discussion of the design and progress of the HILDA Survey refer to Wooden and Watson (2007).

parents' home well into their twenties. Couples with children, regardless of their age, appear no more or less likely to appear in any particular SEIFA decile. For single parents, however, Table 1 indicates that the lowest two deciles contain larger proportions of individuals with children less than 15 years of age.

Table 1: Characteristics of single individuals by SEIFA level (%)

	Lowest 20%	Middle 60%	Highest 20%	Total
Male	46.3	46.8	45.2	46.4
<i>Age in years</i>				
15 to 19	13.1	15.4	14.3	14.6
20 to 29	21.2	24.4	32.0	25.1
30 to 39	18.7	17.6	16.6	17.6
40 to 49	21.5	22.0	17.8	21.1
50 to 59	18.8	16.4	14.3	16.6
60 to 64	6.6	4.3	5.1	5.0
<i>Ethnicity</i>				
Australian-born or ESB migrant	82.7	90.6	90.8	88.8
NESB migrant	11.0	7.1	8.7	8.3
ATSI descent	6.4	2.2	0.5	2.9
<i>Education level</i>				
Less than Year 12	44.8	37.7	22.9	36.6
Year 12	16.2	16.8	18.7	17.0
Vocational qualification	27.8	29.3	23.5	27.9
Tertiary qualification	11.2	16.2	34.9	18.5
<i>Has a child aged:</i>				
0 to 4 years	8.0	6.5	3.6	6.3
5 to 14 years	16.3	13.7	9.5	13.5
15 to 24 years	10.5	11.1	10.3	10.8
Homeowner	50.8	57.5	63.9	57.1
<i>Employment type</i>				
Skilled job	23.5	37.1	53.0	36.9
Unskilled job	32.6	34.7	26.4	32.6
Not employed	43.9	28.2	20.6	30.5
<i>Type of income support received</i>				
Unemployment-related payment	30.9	20.0	10.2	20.7
Other payments	12.5	9.2	5.8	9.3
No income support received	56.6	70.9	84.0	70.0
<i>Region of residence characteristics</i>				
Population (in '000s)	24.5	19.6	16.5	20.2
Proportion of NESB migrants	19.5	17.5	20.0	18.5
Job vacancies (in '000s)	15.8	15.0	14.5	15.1
Public transport to work	7.8	8.9	17.7	10.3
Remoteness measure (ARIA)				
Highly accessible	69.7	79.6	96.4	80.4
Accessible	20.9	16.0	2.9	14.7
Moderately accessible, remote or very remote	9.4	4.3	0.7	4.9
Number of observations	2,624	6,330	2,071	11,025

Notes: The results presented in this table are proportions within each column (except where indicated otherwise) and are based on HILDA Survey data pooled across the first six waves. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

Table 2: Characteristics of couples by SEIFA level (%)

	Lowest 20%	Middle 60%	Highest 20%	Total
<i>Male's age in years</i>				
15 to 19	0.6	0.4	0.2	0.3
20 to 29	13.6	11.1	6.6	10.5
30 to 39	27.5	27.5	24.9	26.9
40 to 49	28.9	31.1	31.7	30.9
50 to 59	21.0	23.0	27.6	23.7
60 or over	8.5	6.9	9.1	7.6
<i>Ethnicity</i>				
Both Australian-born or ESB migrant	76.6	82.3	83.4	81.7
NESB migrant #	19.7	15.9	15.5	16.4
ATSI descent #	3.7	1.8	1.1	2.0
<i>Male's education level</i>				
Less than Year 12	37.2	24.9	10.9	23.6
Year 12	9.3	9.9	9.7	9.8
Vocational qualification	38.8	44.3	35.6	41.4
Tertiary qualification	14.8	20.9	43.8	25.2
<i>Has a child aged:</i>				
0 to 4 years	22.1	23.4	20.5	22.5
5 to 14 years	31.0	35.7	34.2	34.6
15 to 24 years	19.6	19.4	23.6	20.4
Homeowner	69.5	80.9	85.8	80.2
<i>Employment type</i>				
Skilled job #	50.6	71.8	87.0	72.0
Unskilled job #	34.9	20.7	9.4	20.3
Both not employed	14.5	7.6	3.6	7.7
<i>Type of income support received</i>				
Unemployment-related payment #	18.6	13.5	6.5	12.7
Other payments #	3.7	1.7	0.6	1.8
One unemployment-related, one other payment	4.6	2.1	0.6	2.2
Both no income support received	73.1	82.7	92.3	83.4
<i>Region of residence characteristics</i>				
Population (in '000s)	24.1	18.9	18.9	19.7
Proportion of NESB migrants	18.8	15.7	18.2	16.8
Job vacancies (in '000s)	15.4	15.2	13.6	14.8
Public transport to work	7.2	7.3	14.2	8.9
<i>Remoteness measure (ARIA)</i>				
Highly accessible	67.9	75.5	93.6	78.5
Accessible	22.7	19.1	5.7	16.5
Moderately accessible, remote or very remote	9.4	5.5	0.7	5.0
Number of observations	1,790	7,093	2,650	11,533

Notes: The results presented in this table are proportions within each column (except where indicated otherwise) and are based on HILDA Survey data pooled across the first six waves. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

indicates characteristic is true for at least one individual within each couple. In particular, for 'NESB migrant' at least one of the couple is NESB and other is not ATSI; for 'Skilled job' and 'Unskilled job' we take the highest occupational level within each couple.

The results in Tables 1 and 2 also indicate that the characteristics of the regions in which people live differ across SEIFA deciles. For example, the lowest two deciles are more likely to consist of less accessible and remote areas, and have larger populations living in the

regions.⁷ Conversely, the highest two deciles tend to be in more accessible regions (such as major cities), with larger proportions of individuals who use public transport to travel to work, and where there are somewhat fewer job vacancies.

Comparison of the characteristics of people who do and do not move residence in Tables 3 and 4 demonstrates several significant differences between these groups, many of which were also found in the previous report Black *et al.* (2008). It is the case that females, younger persons and persons from ATSI descent are more likely to move, whereas homeowners, older persons and NESB migrants are less likely to move. For people with children we find that those with pre-school children are more likely to move, but for those with school-aged and older children there is a much lower likelihood of moving residence.

In terms of those receiving income support the story is less clear, with single individuals who receive unemployment-related income support appearing slightly less likely to move and those receiving other income support more likely to move. For couples the story is somewhat clearer, with those who have at least one of the couple receiving income support slightly more likely to move, whereas couples receiving no income support are less likely to move.

Tables 3 and 4 also indicate that major life events can be significantly related to the decision of persons to move. For instance, we observe that persons who experience a change in their job situation either through a change in job, a promotion or even redundancy are much more likely to move. Persons who become pregnant or have a newborn baby are also substantially more likely to move, and to a lesser extent persons who have a change in financial situation (for better or worse) or are a victim of property crime are more likely to move.

⁷ The category of highly accessible is sometimes also called major city, accessible is sometimes called inner regional and moderately accessible is sometimes called outer regional.

Table 3: Characteristics of single individuals by whether they moved residence (%)

	Movers	Non-movers	Total
Male	47.9	46.0	46.4
<i>Age in years</i>			
15 to 19	12.5	11.0	11.3
20 to 29	41.5	23.1	26.7
30 to 39	19.6	17.0	17.5
40 to 49	15.3	22.6	21.2
50 to 59	8.5	19.1	17.0
60 or over	2.6	7.3	6.4
<i>Ethnicity</i>			
Australian-born or ESB migrant	88.1	88.6	88.5
NESB migrant	7.8	8.7	8.5
ATSI descent	4.0	2.7	3.0
<i>Education level</i>			
Less than Year 12	29.6	32.9	32.2
Year 12	17.4	16.5	16.7
Vocational qualification	30.7	30.7	30.7
Tertiary qualification	22.4	20.0	20.4
<i>Has a child aged:</i>			
0 to 4 years	6.5	3.1	3.8
5 to 14 years	10.7	11.5	11.3
15 to 24 years	5.6	10.0	9.1
Homeowner	23.6	63.9	56.0
<i>Employment type</i>			
Skilled job	42.0	39.4	39.9
Unskilled job	33.3	33.8	33.7
Not employed	24.8	26.9	26.5
<i>Type of income support received</i>			
Unemployment-related payment	18.9	20.9	20.5
Other payments	10.9	7.3	8.0
No income support received	70.3	71.9	71.6
<i>Major life events</i>			
Changed job	31.1	16.5	19.4
Promoted in job	11.8	8.0	8.8
Made redundant from job	5.6	4.4	4.6
Retired from work	1.4	1.8	1.7
Improved financial situation	4.8	3.1	3.4
Worsened financial situation	7.1	3.7	4.3
Had or expecting new child	3.9	1.5	2.0
Experienced illness	22.8	22.2	22.3
Victim of property crime	9.2	6.5	7.0
Number of observations	2,156	8,869	11,025

Notes: The results presented in this table are proportions within each column (except where indicated otherwise) and are based on HILDA Survey data pooled across the first six waves. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

Table 4: Characteristics of couples by whether they moved residence (%)

	Movers	Non-movers	Total
<i>Male's age in years</i>			
15 to 19	0.7	0.1	0.2
20 to 29	21.0	6.9	8.6
30 to 39	37.3	24.5	26.0
40 to 49	22.2	32.6	31.3
50 to 59	14.1	25.6	24.2
60 or over	4.7	10.4	9.8
<i>Ethnicity</i>			
Both Australian-born or ESB migrant	83.1	81.5	81.7
NESB migrant #	14.5	16.7	16.4
ATSI descent #	2.5	1.9	1.9
<i>Male's education level</i>			
Less than Year 12	20.3	23.7	23.3
Year 12	12.8	9.0	9.4
Vocational qualification	40.8	42.0	41.9
Tertiary qualification	26.1	25.4	25.5
<i>Has a child aged:</i>			
0 to 4 years	32.1	20.7	22.1
5 to 14 years	27.5	36.4	35.4
15 to 24 years	9.4	23.5	21.8
Homeowner	54.0	85.5	81.8
<i>Employment type</i>			
Skilled job #	71.7	72.0	72.0
Unskilled job #	19.1	19.8	19.7
Both not employed	9.3	8.2	8.3
<i>Type of income support received</i>			
Unemployment-related payment #	13.1	12.7	12.8
Other payments #	2.3	1.3	1.4
One unemployment-related, one other payment	3.1	2.0	2.1
Both no income support received	81.5	84.0	83.7
<i>Major life events</i>			
Changed job #	37.9	20.0	22.1
Promoted in job #	19.1	12.0	12.9
Made redundant from job #	6.4	5.2	5.3
Retired from work #	3.4	3.4	3.4
Improved financial situation	4.4	3.3	3.4
Worsened financial situation	4.2	2.2	2.5
Had or expecting new child	17.7	8.4	9.5
Experienced illness	21.3	21.0	21.0
Victim of property crime	7.2	5.4	5.6
Number of observations	1,369	10,164	11,533

Notes: The results presented in this table are proportions within each column (except where indicated otherwise) and are based on HILDA Survey data pooled across the first six waves. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

indicates characteristic is true for at least one individual within each couple. In particular, for 'NESB migrant' at least one of couple is NESB and other is not ATSI; for 'Skilled job' and 'Unskilled job' we take the highest occupational level within each couple.

In Tables 5 and 6 we focus on persons who have moved residence and examine their characteristics by the SEIFA level at their original location and whether the move resulted in a change in this SEIFA level. The results identify many differences between the seven categories of movers, and in the following we discuss some of these differences. For the

single individuals who were in the lowest two deciles but moved up we observe that they are more likely to be female, younger (aged 15-29 years), Australian-born or English Speaking Background (ESB) migrants, and they do not tend to have children. They are also more likely to be highly educated, working in skilled occupations and not receiving any income support. In terms of the region, these persons tend to move a distance of around 200km, move to regions with smaller populations and where more people use public transport to get to work.

Table 5: Characteristics of single individuals who move residence by SEIFA level at original location and direction of change in SEIFA level after moving (%)

	Lowest 20%		Middle 60%			Highest 20%	
	Same	Up	Down	Same	Up	Down	Same
Male	44.4	45.8	51.6	49.3	47.3	41.6	51.3
<i>Age in years</i>							
15 to 19	19.4	15.3	12.1	12.5	12.1	7.1	9.8
20 to 29	32.8	39.6	35.1	41.4	47.3	51.3	44.0
30 to 39	16.7	17.0	23.0	19.6	19.2	18.5	23.3
40 to 49	17.2	16.3	16.9	16.2	11.0	12.2	14.0
50 to 59	9.4	9.4	8.9	8.3	8.2	8.8	6.7
60 or over	4.4	2.4	4.0	2.1	2.2	2.1	2.1
<i>Ethnicity</i>							
Australian-born or ESB migrant	73.3	87.9	87.5	90.0	88.5	92.4	89.6
NESB migrant	12.2	8.3	5.7	7.4	8.2	5.5	10.4
ATSI descent	14.4	3.8	6.9	2.7	3.3	2.1	0.0
<i>Education level</i>							
Less than Year 12	51.7	35.1	37.5	31.2	17.6	18.9	8.3
Year 12	14.4	17.4	17.7	16.9	21.4	16.0	19.2
Vocational qualification	25.6	35.4	35.9	32.9	29.7	25.6	19.7
Tertiary qualification	8.3	12.2	8.9	19.0	31.3	39.5	52.9
<i>Has a child aged:</i>							
0 to 4 years	12.8	6.6	10.5	7.6	1.7	0.8	1.6
5 to 14 years	20.0	10.8	13.7	11.7	5.5	5.5	4.7
15 to 24 years	7.2	5.9	5.2	6.5	2.8	1.7	7.3
Homeowner	16.7	23.3	25.4	23.2	22.0	27.7	26.4
<i>Employment type</i>							
Skilled job	16.7	34.7	32.7	42.2	48.4	54.2	66.3
Unskilled job	33.3	37.5	28.2	34.6	37.4	31.9	25.4
Not employed	50.0	27.8	39.1	23.2	14.3	13.9	8.3
<i>Type of income support received</i>							
Unemployment-related payment	39.4	21.5	28.2	19.8	9.9	6.3	3.6
Other payments	16.1	13.2	12.9	11.3	7.1	7.6	5.7
No income support received	44.4	65.3	58.9	68.9	83.0	86.1	90.7
<i>Changes in region characteristics</i>							
Distance of move (in kms)							
Less than 20	0.76	0.60	0.74	0.70	0.77	0.74	0.79
20 to 50	0.04	0.10	0.09	0.08	0.02	0.04	0.05
50 to 200	0.11	0.06	0.06	0.12	0.05	0.06	0.05
Further than 200	0.09	0.24	0.10	0.10	0.16	0.16	0.11
Difference: population (in '000s)	-0.85	-1.92	1.11	-0.47	-1.13	1.45	-1.46
Difference: proportion of NESB migrants	-0.7	-0.9	0.3	-0.2	0.4	1.4	1.4
Difference: job vacancies (in '000s)	1.55	1.48	1.58	1.39	2.50	1.32	2.11
Difference: public transport to work	0.0	0.9	-1.1	0.0	2.5	-1.8	-0.2
Remoteness measure (ARIA)							
No change in accessibility	91.7	85.8	86.3	89.2	88.5	92.4	97.9
Improved accessibility	5.0	10.1	3.6	5.7	9.3	2.5	0.5
Worsened accessibility	3.3	4.2	10.1	5.1	2.2	5.0	1.6

Table 5: Continued

	Lowest 20%		Down	Middle 60%		Highest 20%	
	Same	Up		Same	Up	Down	Same
Number of observations	180	288	248	827	182	238	193
<i>Reason for move</i>							
Lifestyle	17.0	17.7	21.7	22.0	18.4	26.8	21.5
Family	20.0	21.3	18.4	15.6	16.3	9.7	11.0
Enforced	14.5	10.8	16.9	12.7	15.3	14.5	17.0
Job related	7.0	11.7	11.0	16.0	19.4	15.2	15.0
Cheaper house	7.0	6.9	9.2	8.5	6.1	7.1	9.0
More expensive house	20.0	11.7	11.0	12.7	7.7	9.7	11.5
Look for work	3.0	5.4	1.5	1.2	2.0	0.4	1.0
Health	3.0	4.2	4.8	2.0	1.5	0.7	1.0
Other	8.5	10.2	5.5	9.3	13.3	16.0	13.0
Number of observations	200	333	272	954	196	269	200

Notes: The results presented in this table are proportions within each column (except where indicated otherwise) and are based on HILDA Survey data pooled across the first six waves. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom four categories is considered an 'Unskilled job'.

The single individuals who were in the middle six deciles and then moved down are more likely to be male, middle-aged (20-39 years), less educated, not employed and receiving income support. There is also a significant number who are single parents with children aged 0-14 years. On average these persons tend to move over a distance of 100km to regions with a larger population, and there is a large group who move to less accessible regions.

In contrast, the single individuals in the middle six deciles who moved to a higher decile in Table 5 are more likely to be female, aged in their twenties, highly educated and working in skilled employment, and less likely to be receiving income support. These persons are also very unlikely to have any children. In terms of moving, we observe that the persons who move up from the middle six deciles tend to move over a longer distance than those who move down, and they tend to move to regions with smaller populations and more job vacancies.

For the single individuals who were in the highest two deciles but moved down, we observe they are more likely to be male, younger (aged 20-29 years), less likely to have any children, and have an education below a Tertiary qualification. Interestingly, many still work in skilled employment and so are less likely to be receiving income support. There is also a large group who are homeowners, which seems to suggest that given their age, employment and lack of children many within this category may be first home buyers leaving their parents' homes for the first time. The average moving distance of over 180km is quite large (although lower than the distance moved by those who moved up in SEIFA level) and these persons tend to move

to regions with slightly larger populations.⁸ The reason for the move varies across the different SEIFA levels, although the most important reasons are similar across the different levels.⁹ Overall, lifestyle is the most important reason to move for singles, followed by family. However, there are differences depending on whether they live in low, middle or high SEIFA areas. The most named reason to move is family for low SEIFA residents (with lifestyle in the second place), and lifestyle for the middle group and the high SEIFA group (with job-related reasons and family close to each other in the second place). Overall, job-related reasons are the third-most named. For those in the middle-SEIFA group who move up or remain at the same SEIFA level, job-related reasons are particularly important. For those in the lowest SEIFA areas, moving to a more expensive house is an important reason as well.

Table 6: Characteristics of couples who move residence by SEIFA level at original location and direction of change in SEIFA level after moving (%)

	Lowest 20%		Middle 60%			Highest 20%	
	Same	Up	Down	Same	Up	Down	Same
<i>Male's age in years</i>							
15 to 19	1.1	0.6	0.8	0.7	0.8	0.7	0.0
20 to 29	23.3	25.4	25.4	21.8	17.1	16.1	15.0
30 to 39	33.3	34.3	34.3	36.9	43.9	38.0	42.1
40 to 49	20.0	26.6	23.1	21.8	20.3	20.4	22.6
50 to 59	16.7	10.1	9.0	14.6	13.8	19.0	15.8
60 or over	5.6	3.0	7.5	4.3	4.1	5.8	4.5
<i>Ethnicity</i>							
Both Australian-born or ESB migrant	75.6	77.5	84.3	85.9	81.3	82.5	83.5
NESB migrant #	22.2	17.8	13.4	11.7	15.5	15.3	16.5
ATSI descent #	2.2	4.7	2.2	2.4	3.3	2.2	0.0
<i>Male's education level</i>							
Less than Year 12	43.3	22.5	28.4	22.0	12.2	9.5	5.3
Year 12	10.0	12.4	14.2	14.2	13.0	11.0	9.0
Vocational qualification	37.8	49.1	40.3	43.9	37.4	40.9	22.6
Tertiary qualification	8.9	16.0	17.2	19.9	37.4	38.7	63.2
<i>Has a child aged:</i>							
0 to 4 years	38.9	29.6	29.9	31.9	35.0	33.6	30.1
5 to 14 years	28.9	24.9	26.9	30.2	23.6	24.1	26.3
15 to 24 years	7.8	12.4	7.5	8.9	8.9	8.8	12.0
Homeowner	30.0	54.4	51.5	54.9	52.9	65.7	57.1
<i>Employment type</i>							
Skilled job #	38.9	66.3	58.2	69.1	90.2	87.6	91.7
Unskilled job #	34.4	27.2	22.4	22.1	4.9	8.0	6.0
Both not employed	26.7	6.5	19.4	8.8	4.9	4.4	2.3
<i>Type of income support received</i>							
Unemployment-related payment #	27.8	11.8	20.2	14.8	4.9	8.8	2.3
Other payments #	8.9	2.4	4.5	1.7	0.0	1.5	0.8
One unemp.-related, one other payment	8.9	6.5	5.2	2.4	0.0	2.2	0.0
Both no income support received	54.4	79.3	70.2	81.1	95.1	87.6	97.0

⁸ Appendix Table A.2 presents an overview of the distance of move by age categories. This shows that young singles are more likely to move longer distances than older singles while the reverse is true for couples.

⁹ See Appendix Table A.1 for an overview of what reasons are combined to create the categories included in Tables 5 and 6.

Table 6: Continued

	Lowest 20%		Down	Middle 60%		Highest 20%	
	Same	Up		Same	Up	Down	Same
<i>Changes in region characteristics</i>							
Distance of move (in kms)							
Less than 20	0.74	0.66	0.50	0.66	0.68	0.57	0.84
20 to 50	0.09	0.07	0.16	0.10	0.03	0.14	0.00
50 to 200	0.04	0.12	0.03	0.07	0.05	0.10	0.04
Further than 200	0.13	0.16	0.32	0.17	0.25	0.18	0.11
Difference: population (in '000s)	1.84	-5.10	1.28	-0.83	-2.05	1.53	1.33
Difference: proportion of NESB migrants	0.6	-2.4	-0.7	-1.1	-1.9	1.1	-0.1
Difference: job vacancies (in '000s)	1.35	1.37	0.78	1.29	-0.01	1.76	1.11
Difference: public transport to work	-0.3	-0.1	-1.3	-1.0	0.6	-3.5	-0.1
Remoteness measure (ARIA)							
No change in accessibility	84.4	87.0	77.6	88.9	91.9	91.2	98.5
Improved accessibility	8.9	6.5	6.7	5.3	6.5	3.7	1.5
Worsened accessibility	6.7	6.5	15.7	5.8	1.6	5.1	0.0
Number of observations	90	169	134	583	123	137	133
<i>Reason for move</i>							
Lifestyle	22.6	20.3	27.7	25.5	15.1	26.6	20.7
Family	9.7	8.1	6.4	6.0	10.3	8.2	5.0
Enforced	16.1	13.7	12.1	12.4	10.3	11.4	15.7
Job related	5.4	12.7	16.3	15.6	19.9	17.7	10.7
Cheaper house	6.5	3.1	9.2	6.0	4.1	8.2	5.0
More expensive house	24.7	32.5	14.9	26.1	33.6	16.5	32.1
Look for work	2.2	1.0	0.7	0.5	0.7	0.0	0.0
Health	6.5	2.5	6.4	1.7	0.0	3.2	2.1
Other	6.5	6.1	6.4	6.3	6.2	8.2	8.6
Number of observations	93	197	141	636	146	158	140

Notes: The results presented in this table are proportions within each column (except where indicated otherwise) and are based on HILDA Survey data pooled across the first six waves. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom four categories is considered an 'Unskilled job'.

indicates that characteristic is true for at least one individual within each couple. In particular, for 'NESB migrant' at least one of couple is NESB and other is not ATSI; for 'Skilled job' and 'Unskilled job' we take the highest occupational level within each couple.

For couples many of the previously mentioned patterns also exist (see Table 6). There are, however, some differences that exist between single individuals and couples who move residence. In general, among the couples who move we observe that they tend to be older (at least in terms of the age of the male partner) than singles, they are more likely to be homeowners, and they tend to move farther than single individuals. Apart from these general differences, couples who move between SEIFA deciles sometimes appear different to single individuals who make the same move. For instance, couples who move up from the lowest two deciles are very likely to have young children (aged 0-14 years), which is the direct opposite for single individuals. For couples who move into the highest two deciles from the middle deciles we also observe that they are very likely to have young children and to have at least one of the couple working in skilled employment. Similarly, for couples who move down from the highest two deciles, we observe they are likely to have young children, most

are employed and in skilled work, and around 65 per cent are homeowners. This may suggest that many of these couples are moving for work-related reasons, causing them to move from the highest two SEIFA deciles. Checking this against the reason for the move reported in HILDA, we find that job-related reasons are the second-most important reason to move for this group.

Overall, moving to a more expensive house is named most often as the reason to move, followed by lifestyle and job-related reasons in second and third place, respectively. The reason to move varies across the different SEIFA levels, although the most important reasons are similar across the different levels. Moving to a more expensive house is the most important reason for couples who move up or remain at the same SEIFA level. This is followed by lifestyle for all these groups, except for those in the middle SEIFA area moving up, who report job-related reasons as the second-most important reason. Lifestyle is the most important reason to move for couples living in middle or high SEIFA areas, who moved down in SEIFA level. Job-related reasons are the second-most named reason for this group. Job-related reasons appear more important for couples living in middle and high SEIFA areas than for couples in low SEIFA areas. Compared to singles, family reasons are much less important.

2.3 The RED Data

The version of the RED data made available to us by DEEWR contains information on all individuals in Australia who had received an income support payment between 1st July 1998 and 27th June 2008. For the analyses in this report, however, we are forced to focus on the information concerning individuals who had received an income support payment between 1st July 2002 and 27th June 2008. The reason for this is that some critical information, such as recipients' postcode information which we use to identify moving residence, is not available within the earlier years of RED. In addition, we take a 10 per cent random sample of these persons on income support to better enable us to examine this large amount of data.

To consider the issue of social exclusion among income support recipients we first examine the individual characteristics of those receiving income support payments by year and by the SEIFA level. We then proceed to consider the spatial mobility of income support recipients by examining the extent to which these individuals move each year and the characteristics of those who do and do not move residence.

In Table 7 we present the average characteristics of individuals receiving income support for each year between 2002 and 2008. These characteristics appear relatively stable for this

period, although the number of women has slightly increased while the number of single (non-partnered) persons has slightly decreased. The findings from Table 7 are similar to those found in the previous report by Black *et al.* (2008) which was based on data from 1995 to 2005. For instance, we find that the trend of declining numbers of ESB migrants on income support has continued, whereby in 1995 8.9 per cent of income support recipients were ESB migrants but this has reduced to 6.9 per cent in 2008.

Table 7: Characteristics of individuals receiving income support by year (%)

	Year						
	2002	2003	2004	2005	2006	2007	2008
Female	54.7	54.4	55.3	55.7	56.1	56.5	58.0
Single	41.9	42.6	42.1	41.8	41.4	40.7	39.4
Age in years (average)	40.2	39.6	39.9	40.0	40.4	40.7	41.8
<i>Has a child aged:</i>							
0 to 4 years	13.5	13.8	13.8	13.8	14.0	14.4	14.1
5 to 12 years	17.5	17.1	17.3	17.6	17.5	17.3	17.6
13 to 15 years	7.9	7.8	8.0	8.3	8.4	8.4	8.5
<i>Ethnicity</i>							
NESB migrant	18.5	18.2	18.3	18.4	18.6	18.8	19.1
ESB migrant	8.4	8.2	8.0	7.8	7.5	7.2	6.9
ATSI descent	5.1	5.1	5.4	5.8	6.1	6.4	6.7
SEIFA score (average)	991.25	991.55	991.22	990.75	990.42	989.84	989.07
<i>State of residence</i>							
N.S.W	31.4	31.3	31.5	31.9	32.4	32.9	33.4
VIC	23.1	23.3	23.7	23.7	24.1	24.4	24.3
QLD	21.1	21.3	20.9	20.7	20.2	19.8	19.5
S.A	8.5	8.4	8.5	8.5	8.6	8.7	8.8
W.A	9.8	9.6	9.4	9.2	8.7	8.2	8.0
TAS	3.4	3.3	3.3	3.3	3.3	3.3	3.3
N.T	1.5	1.4	1.5	1.5	1.5	1.5	1.6
A.C.T	1.3	1.3	1.2	1.3	1.2	1.1	1.1
Number of observations	272,863	301,340	295,561	285,826	278,931	265,404	230,249

Notes: The results presented in this table are proportions within each column (except where indicated otherwise). For definitions of abbreviations used refer to the List of Abbreviations on page 4. Characteristics are measured at the first fortnight each person is observed for each year; SEIFA scores are measured at the ABS statistical regions in which individuals live.

Over the period between 2002 and 2008 we observe that the average SEIFA score of the area in which income support recipients live has slightly declined. This average score is found to be around the middle range of SEIFA scores, although somewhat towards the lower end. In fact, from Table 8 we find that around 31 per cent of income support recipients live in areas with a SEIFA score in the lowest two deciles, 59 per cent in the middle six deciles and 10 per cent in the highest two deciles. This confirms what we found in the HILDA data, which was that income support recipients are overrepresented in low-SEIFA areas when compared to the general population.

Table 8: Characteristics of individuals receiving income support by SEIFA level (%)

	Lowest 20%	Middle 60%	Highest 20%
Male	44.9	43.9	44.4
Partnered	24.4	22.4	18.1
Partner receiving income support payment	27.8	25.1	19.5
<i>Age in years</i>			
15 to 19	7.5	7.1	4.8
20 to 29	21.1	21.1	23.8
30 to 39	21.8	21.5	22.0
40 to 49	19.8	19.2	19.4
50 to 59	19.8	19.8	18.2
60 or over	10.0	11.2	11.8
<i>Ethnicity</i>			
Australian-born	59.0	72.2	67.5
ESB migrant	6.3	8.2	9.3
NESB migrant	25.9	14.8	21.9
ATSI descent	8.8	4.8	1.2
<i>Has a child aged:</i>			
0 to 4 years	15.2	13.6	10.2
5 to 12 years	18.1	17.3	14.2
13 to 15 years	8.4	8.1	6.8
<i>Type of tenancy</i>			
Homeowner	15.5	14.1	14.9
Private renter	42.0	45.0	47.8
Government renter	4.5	3.3	3.0
Other housing	0.2	0.2	0.3
<i>Type of income support received</i>			
Unemployment-related payment	37.6	36.8	40.1
DSP	25.2	25.8	25.5
PPS	16.2	17.4	15.0
PPP	11.4	10.3	9.1
Other payments	9.6	9.6	10.2
Has earned income	28.7	35.0	36.7
Amount of earned income per year (\$) (average)	1656.75	2135.40	2162.99
Has unearned income	36.0	42.5	48.1
Amount of unearned income per year (\$) (average)	309.68	407.76	496.61
Total number of moves of residence (average)	0.243	0.259	0.255
<i>Region of residence characteristics (averages)</i>			
Population (in '000s)	328.838	315.732	325.998
Unemployment rate	6.08	5.54	4.35
Median house price (\$)	296280.10	312712.70	524071.60
Median unit price (\$)	232581.40	243028.00	323631.00
SEIFA score	971.29	991.29	1049.53
Number of skilled job vacancies	4810.60	4966.74	4567.60
Number of unskilled job vacancies	12966.71	12924.91	10273.80
Number of observations	599,480	1,145,987	190,383

Notes: The results presented in this table are proportions within each column (except where indicated otherwise). For definitions of abbreviations used refer to the List of Abbreviations on page 4. Characteristics are measured at the first fortnight each person is observed for each year; SEIFA scores are measured at the ABS statistical regions in which individuals live.

Table 8 further presents the individual characteristics of income support recipients living in areas deemed to be in low, medium and high SEIFA deciles, along with some characteristics of the region in which they live. These results indicate that there are some clear differences between individuals and regions across the SEIFA levels. For instance, we find that

individuals who are partnered (especially if the partner is also receiving income support), have children, and have no earned or unearned income are less likely to live in high-SEIFA areas. It also appears that NESB migrants and persons from ATSI descent are more likely to live in the lowest two SEIFA deciles. Furthermore, we observe that regions within the lowest SEIFA deciles have higher rates of local unemployment, lower house and unit prices, and higher vacancy rates for both skilled and unskilled jobs.

To consider the spatial mobility of income support recipients we first look at the proportions of these individuals who move residence on one or more occasion during each year. From Table 9 we observe that between 18 and 21 per cent of income support recipients (male and female) move residence in a given year, and that males appear more likely to move than females. For the entire seven-year period over one-third of all income support recipients have moved residence at least once. The results also appear to indicate that there has been a slow decline in the rates of mobility over time, which is similar to what was found in the previous report. Note that the mobility rates in 2002 and 2008 are much lower as RED does not contain full information for these years, rather they only represent a 6-month period.

Table 9: Proportion of individuals receiving income support who move residence (at least once) by year and gender (%)

Year	Males	Females	All
2002	13.2	11.7	12.4
2003	20.7	19.3	19.9
2004	19.6	18.2	18.8
2005	19.2	18.0	18.6
2006	19.0	17.9	18.4
2007	18.7	17.5	18.0
2008	11.4	10.3	10.8
2002 to 2008	36.8	39.4	38.2

In Table 10 we decompose the mobility rates of income support recipients into the number of moves per year. This shows the increase in the proportion of individuals who do not move, along with the decreases in the proportions of those who do move. In fact, we can see that the largest declines occur among those who move only once, and there are only marginal declines for persons who move multiple times during a year. These results are similar for males and females. Table 10 also indicates that the majority of those who move residence in a given year only move once, although there is around 6 to 7 per cent who move multiple times.

To further examine the spatial mobility of income support recipients we present the individual characteristics of movers and non-movers in Table 11. Similar to the previous report by Black *et al.* (2008), we find that females and older persons are less likely to move, whereas singles

are much more likely to move. A new insight, however, which arises from our ability to distinguish between pre-school children (aged 0-4 years) and school-age children (aged 5-15 years) using RED, is that persons with pre-school children are more likely to move but those with school-age children are less likely to move.

Table 10: Total number of moves of residence by individuals receiving income support by year and gender (%)

Year	Total number of moves			
	0	1	2	3 or more
		Males		
2002	86.8	9.9	2.3	1.0
2003	79.3	13.2	4.6	2.9
2004	80.4	12.7	4.2	2.7
2005	80.8	12.4	4.2	2.7
2006	81.0	12.2	4.1	2.7
2007	81.3	12.1	4.1	2.6
2008	88.6	8.4	2.1	0.9
2002 to 2008	63.2	16.1	7.9	12.7
		Females		
2002	88.3	9.2	1.8	0.7
2003	80.8	13.3	3.9	2.1
2004	81.8	12.6	3.7	1.9
2005	82.0	12.6	3.5	1.9
2006	82.2	12.5	3.5	1.9
2007	82.5	12.2	3.5	1.8
2008	89.7	8.1	1.6	0.6
2002 to 2008	60.6	17.8	9.0	12.6
		All		
2002	87.6	9.5	2.0	0.8
2003	80.1	13.3	4.2	2.4
2004	81.2	12.6	3.9	2.3
2005	81.4	12.5	3.8	2.2
2006	81.7	12.3	3.8	2.2
2007	82.0	12.1	3.7	2.2
2008	89.3	8.2	1.8	0.7
2002 to 2008	61.8	17.0	8.5	12.7

Note: The results reported in this table are proportions which sum to 100.0 across each row.

The results in Table 11 also indicate that NESB migrants are less likely to move, whereas persons from ATSI descent are more likely to move. Examination by state shows that those living in New South Wales and Victoria are less likely to move, whilst those living in Queensland, Western Australia and the Northern Territory are more likely to move. Finally, the average SEIFA scores of the areas in which people live appear somewhat higher for those who move residence during a given year.

Table 11: Characteristics of individuals receiving income support by whether move residence and year (in %)

	Year							
	2002		2003		2004		2005	
	Movers	Non-movers	Movers	Non-movers	Movers	Non-movers	Movers	Non-movers
Female	51.6	55.0	52.4	54.8	53.4	55.7	54.0	56.0
Single	49.4	40.7	49.3	40.8	48.9	40.3	48.0	40.2
Age in years (avg.)	33.9	41.2	33.8	41.1	33.6	41.4	33.8	41.5
<i>Has a child aged:</i>								
0 to 4 years	17.4	12.8	18.2	12.6	18.8	12.6	19.0	12.6
5 to 12 years	14.8	17.8	15.5	17.5	15.6	17.6	16.0	17.9
13 to 15 years	5.3	8.2	5.7	8.3	5.8	8.5	6.3	8.7
<i>Ethnicity</i>								
NESB migrant	13.0	19.5	13.5	19.7	13.1	19.8	13.1	19.8
ESB migrant	8.5	8.3	8.0	8.3	7.8	8.0	7.6	7.8
ATSI descent	8.2	4.7	8.0	4.4	8.6	4.7	9.3	5.0
SEIFA score (avg.)	993.00	991.01	993.19	991.14	992.87	990.84	991.74	990.53
<i>State of residence</i>								
N.S.W	28.2	31.8	28.4	32.1	27.9	32.4	28.4	32.7
VIC	19.8	23.6	20.1	24.1	21.0	24.3	21.1	24.3
QLD	26.0	20.4	25.7	20.2	25.3	19.9	25.3	19.6
S.A	8.1	8.6	8.3	8.5	8.6	8.4	8.4	8.5
W.A	11.3	9.6	11.0	9.3	10.7	9.1	10.4	8.9
TAS	3.1	3.4	3.2	3.3	3.2	3.3	3.0	3.3
N.T	2.1	1.4	2.0	1.3	2.0	1.3	2.0	1.4
A.C.T	1.4	1.3	1.3	1.3	1.3	1.2	1.3	1.2
No. observations	33,946	240,610	60,407	242,641	55,948	241,275	53,322	234,043

	Year					
	2006		2007		2008	
	Movers	Non-movers	Movers	Non-movers	Movers	Non-movers
Female	54.5	56.4	54.8	56.9	55.6	58.3
Single	47.5	39.9	46.1	39.5	46.4	38.5
Age in years (avg.)	34.1	41.8	34.4	42.1	34.3	42.7
<i>Has a child aged:</i>						
0 to 4 years	19.3	12.7	20.3	13.1	19.4	13.5
5 to 12 years	16.1	17.7	16.4	17.5	15.4	17.8
13 to 15 years	6.3	8.8	6.6	8.7	6.2	8.8
<i>Ethnicity</i>						
NESB migrant	13.2	20.0	13.4	20.0	12.7	19.9
ESB migrant	7.4	7.5	7.0	7.2	6.7	6.9
ATSI descent	9.8	5.3	10.2	5.6	12.0	6.1
SEIFA score (avg.)	992.10	990.05	991.64	989.45	990.65	988.88
<i>State of residence</i>						
N.S.W	29.0	33.2	29.7	33.6	29.5	33.8
VIC	20.9	24.8	21.5	25.0	20.8	24.7
QLD	24.8	19.1	24.2	18.9	25.0	18.9
S.A	8.6	8.6	8.8	8.7	8.3	8.9
W.A	10.2	8.4	9.3	7.9	9.4	7.8
TAS	3.2	3.3	3.2	3.3	3.2	3.3
N.T	2.0	1.4	2.1	1.4	2.5	1.5
A.C.T	1.3	1.2	1.2	1.1	1.2	1.1
No. observations	51,182	227,749	47,811	217,593	24,756	205,593

Notes: The results presented in this table are proportions within each column (except where indicated otherwise). For definitions of abbreviations used refer to the List of Abbreviations on page 4. Characteristics are measured at the first fortnight each person is observed for each year; SEIFA scores are measured at the ABS statistical regions in which individuals live.

Individual characteristics of income support recipients classified by the total number of moves are in Table 12. Movement patterns are similar to those found in Table 11, although some extra insights can be gained. For instance, females are once again less likely to move, and males are particularly found to be more likely to move three or more times during a year.

Income support recipients aged less than 29 years are more likely to move than older income support recipients. They are also much more likely to move multiple times as we can see from the decline in the proportion of older age groups within the high mobility columns. NESB migrants are found to not only be less likely to move, but when they do move they are found to move less often. The opposite is the case for income support recipients from ATSI descent.

Table 12 also presents results on mobility by the type of income support payment individuals receive. It is found that the type of income support received matters for the incidence of moving residence. Those receiving unemployment-related payments are found to be the most likely to move and to move frequently, whilst those receiving parenting payments who are partnered are the least likely to move.

The results for the average number of children by the number of moves accord with our previous findings, which were that persons with pre-school children are more likely to move and we also see they are more likely to move numerous times. For those with school-aged children, Table 12 indicates that they are most likely to move just once or not at all. The average SEIFA value is similar across all groups, with the exception that for those who move once this value is a little higher. There are also some small regional differences in the mobility of income support recipients. This mobility and frequency of mobility is highest in Queensland, Western Australia and the Northern Territory, but lowest in Victoria and New South Wales.

For the estimation of our econometric models, we reduce the RED data to one observation per individual for each calendar year they receive income support (for at least one day) during the period 1st July 2002 to 27th June 2008.¹⁰ To supplement the information contained in RED we match data on housing prices, local unemployment rates, population sizes, job vacancies and the 2001 SEIFA measure to the postcodes and ABS statistical regions in which individuals live (at their first appearance on income support for each year).

¹⁰ This means that for 2002 and 2008, only 6 months of information are used.

Table 12: Characteristics of individuals receiving income support by total number of moves in a year (in %)

	Total number of moves per year				Average number of moves	
	0	1	2	3 or more	per year	over entire period
Male	43.9	44.5	48.7	53.4	0.280	1.063
Female	56.1	55.5	51.3	46.6	0.238	1.026
<i>Age in years</i>						
15 to 19	6.0	10.1	15.4	18.5	0.501	1.631
20 to 24	9.5	17.4	20.4	21.0	0.444	1.436
25 to 29	9.5	15.4	16.0	15.9	0.381	1.396
30 to 34	10.4	13.8	13.5	13.4	0.318	1.230
35 to 39	10.9	11.3	10.4	10.1	0.253	1.001
40 to 44	10.8	9.1	7.9	7.5	0.204	0.843
45 to 49	9.7	6.8	5.8	5.1	0.169	0.713
50 to 54	9.6	5.8	4.2	3.6	0.138	0.626
55 to 59	12.2	5.8	3.8	2.9	0.108	0.518
60 to 64	11.4	4.5	2.8	1.9	0.091	0.256
<i>Ethnicity</i>						
Australian-born	67.4	70.0	70.3	69.2	0.265	1.056
ATSI descent	5.1	7.2	12.0	16.7	0.497	2.465
ESB migrant	7.8	7.9	7.1	6.6	0.244	0.951
NESB migrant	19.8	14.9	10.6	7.6	0.158	0.664
Partner on income support	27.4	16.9	13.1	10.4	0.153	0.594
<i>Type of income support received</i>						
Unemployment-related	34.9	47.5	57.5	63.5	0.371	1.184
DSP	27.6	17.8	15.3	16.1	0.170	0.893
PPS	16.4	20.8	17.4	13.5	0.267	1.293
PPP	11.2	7.9	5.8	4.1	0.155	0.643
Other	9.9	6.1	4.0	2.7	0.130	0.583
<i>State of residence</i>						
A.C.T	1.2	1.3	1.3	1.2	0.267	1.066
N.S.W	32.8	29.1	28.1	26.5	0.224	0.938
VIC	24.4	21.9	19.0	17.2	0.213	0.855
QLD	19.6	24.4	26.5	27.8	0.322	1.269
S.A	8.6	8.4	8.3	9.0	0.257	1.078
W.A	8.8	10.1	10.7	11.8	0.306	1.186
TAS	3.3	3.1	3.4	3.4	0.253	1.120
N.T	1.4	1.7	2.7	3.1	0.403	1.890
<i>Average values within mobility group</i>						
<i>Average number of children in HH aged:</i>						
0 to 4 years	0.201	0.320	0.315	0.279		
5 to 12 years	0.310	0.322	0.252	0.192		
13 to 15 years	0.111	0.091	0.069	0.052		
Average SEIFA score	990.7	993.4	990.8	990.7		

Notes: The results reported in columns 'Total number of moves per year' are proportions, which sum to 100.0 down each column, except for numbers of children in household and SEIFA score where results are means. The values of the individual characteristics are taken from the first fortnight persons appear in RED data for each year. For the column 'Average number of moves over entire period' the values of the individual characteristics are taken from the first fortnight of the first year persons appear in RED data (that is, a person's first appearance in RED during the period 2002 to 2008). For definitions of abbreviations used refer to the List of Abbreviations on page 4.

3. Methodology I: Spatial mobility and social exclusion

In the first part of this study, we focus on modelling the pattern of spatial mobility associated with social segregation. The decision mechanism that people utilise when choosing where to live should be reflected in the design of the conceptual model. Although price is a factor that cannot be ignored, family type combined with an individual's/income unit's life stage is likely to influence the importance (or weights) people assign to other decision factors, such as job access, school access, quality of environment and the ethnic composition of the neighbourhood. Importantly, after controlling for personal circumstances and area features, we intend to find out whether the SEIFA of a neighbourhood affects people's choice of location. If individuals move to disadvantaged areas due to constraints arising from their personal situation and financial resources, then the sorting process into neighbourhoods reinforces deprivation. This type of spatial mobility could potentially reinforce social exclusion via unemployment and low income.

Researchers argue that neighbourhood effects not only operate directly through the quality of services available in the locality, but that local social norms, which are influenced by the balance between different groups in the population, also shape the expectations and knowledge of the residents. For example, there is concern that a concentration of disadvantaged groups will help develop a "culture of poverty", which will influence the outcomes of future generations (Buck, 2001).

Analysing the effect of spatial mobility on the extent and persistence of social exclusion is hoped to identify the factors that result in spatial segregation and create social inequalities, which may then affect social cohesion and economic efficiency. Finally, this study aims to provide some empirical support for policies aiming to mitigate aspects of disadvantage within low-SEIFA locations.

The statistical analysis of LDS data by Morrow (2000) found that unemployment benefit (NewStart and Youth Training Allowance) recipients tend to move to better regions which have higher socioeconomic index (SEIFA 96) and accessibility (ARIA). Conversely, Sole Parent Pension and Disability Support Pension recipients were found to move into more disadvantaged and remote areas. However, this analysis is based solely on descriptive statistics, and as a result, factors relating to individual and income unit status and area features have not been controlled for.

Similar to the previous location economics report (Black *et al.*, 2008), in this report the mobility patterns of income support recipients and the general population are studied separately. A question of interest is whether the internal migration of income support recipients is more likely to be related to downward social mobility when compared to the general population. The approach for the two populations is the same and is described in Sections 3.1, 3.2 and 3.3. The first subsection focuses on the modelling approach, while the second discusses the model specification; in particular, the sample to be used and explanatory variables to be considered. Section 3.3 describes the three decision levels to be defined.

3.1 Econometric methodology

The econometric methodologies used in the internal migration literature are mainly of three types: conditional logit, nested logit and mixed logit (Hunt *et al.*, 2004; Cushing and Cushing, 2007). The conditional logit model has the disadvantage of depending on the Independence of Irrelevant Alternatives (IIA) assumption¹¹, although Train (2003) suggests that a well-specified conditional logit model can capture most of the correlation over alternatives. In Black *et al.* (2008) a conditional logit model was applied. This model captured the individual variation by making the influence of regional attributes on the location choice dependent on individual characteristics and on the current location of the individual.

The nested logit model partially relaxes the IIA assumption by allowing for correlation in the random components for subsets of the alternatives, but imposes the restriction of equal correlation among the random utility components of nested alternatives (Train, 2003). This approach allows for a specific pattern of dependence among choices. In a nested model, we can think of the choice to be made as a two- (or more-) level choice. For example, in the location decision, an individual first chooses in which State or Territory they want to live, then whether they want to live in the capital city or outside, and finally a specific region is chosen. Each of these three levels would have its own set of attributes that may influence the choice. The attributes at the lower levels also influence the choice at the higher level through a so-called inclusive value, which sums the contributions of the attributes at the lower level. In our example, the inclusive value for a particular State or Territory would include the attributes for the capital city and for the area outside the capital city in that State or Territory.

The mixed logit model fully relaxes the IIA assumption. In a mixed logit model each individual can weight each destination attribute differently, in this way incorporating taste

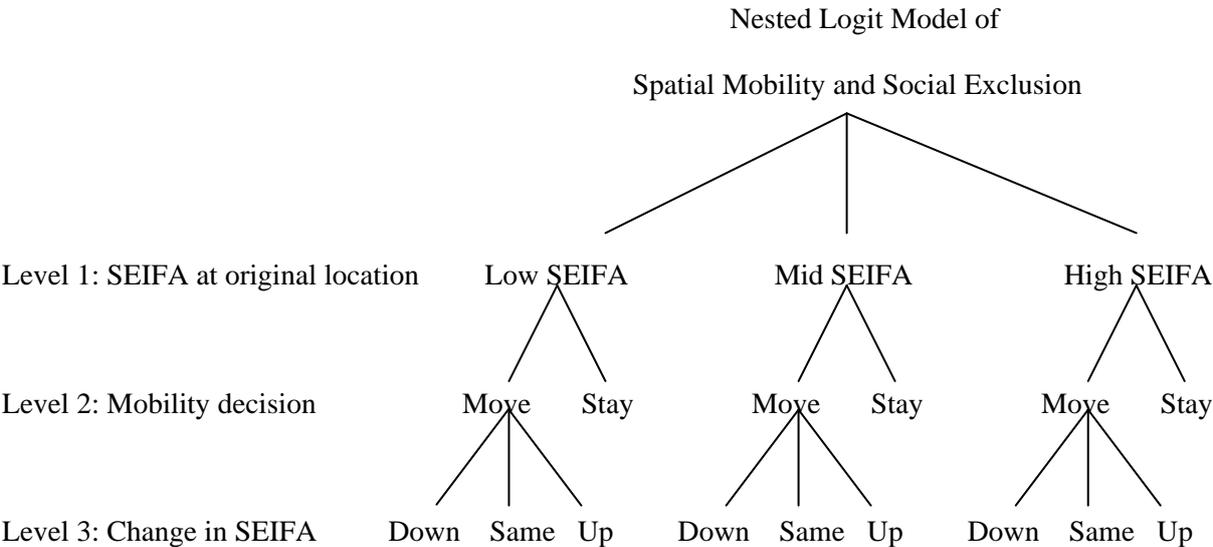
¹¹ IIA means that the odds ratio of two alternatives is not affected by the presence of a third alternative. This property arises from the specific functional form of a multinomial or conditional logit model.

variations across individuals. This is achieved by allowing the coefficient indicating the effect of an attribute to be random. For example, the competing destination model, which is one extension of the mixed logit model, accounts for the fact that individuals making the choices are located in a specific space and as a result of this specific starting point the different destinations may hold a different attraction to each of them (Pellegrini and Fotheringham, 1999).

Similar to other spatial mobility studies (including those based on nested logit and mixed logit models), the conditional logit model that was applied to study location economics in our previous report defined the dependent variable as a choice from a large number of destinations.¹² This allowed us to make inferences about the individual/income unit characteristics combined with area attributes that have an impact on an individual’s location choice. Our first analysis in this extended report uses the conditional logit model with the average SEIFA score as an additional explanatory variable to obtain information on whether area disadvantage/advantage has a negative or positive effect on an individual’s destination choice, and whether this differs by population type.

However, we are also interested in the aspect of social mobility associated with internal migration. Thus, we propose an additional analysis based on a three-level nested logit model, with dependent variables defined according to the social advantage/disadvantage index (SEIFA) of the original location and the chosen destination. The structure of the model is illustrated in Figure 1.

Figure 1: Structure of the nested logit model of spatial mobility and social exclusion



¹² See Appendix Table A3 for a list of the regions distinguished.

The three levels distinguished in the nested logit model are:

1. Top level – “choice” for the original level of social exclusion (at each individual’s starting location), subdivided into three groups: low SEIFA, middle SEIFA, high SEIFA;
2. Second level – individual’s choice to move or stay where they are, where the choice of staying is a degenerated branch (such that there is no further choice at the third level);
3. Third level – direction of the move with respect to social exclusion as measured by the change of SEIFA in the area of residence, whereby there are three options: downward (more socially disadvantaged), same and upward.

This type of model has the added advantage of being able to deal with mobility between a larger number of smaller regions compared to the conditional logit model with specific areas as the outcome variable.

The type of model presented in Figure 1 can provide empirical evidence on the following issues:

- i. How personal and family characteristics, and area features affect the probability of moving and the social direction of the move. This relationship is investigated separately for three levels of SEIFA (low, middle and high) at the individual’s original location.
- ii. How unobserved factors are correlated with the original location, the decision to move or stay, and the mobility with regard to SEIFA level.
- iii. Cross-elasticities can measure the impact of changes in attributes on the probability of switching between different “choices” (such as originally being located in an advantaged or disadvantaged area, moving or staying, moving socially upward or downward).

When trying to estimate this model in Section 5, we found that even a two-level nested logit, based on the first and the third levels, for the individuals in the sample who moved did not provide sensible results using the relevant HILDA and RED data. The inclusion parameters indicating the level of correlation between levels were all much larger than one, which suggests that the definition of the model is not consistent with the random utility maximisation principles, and thus the nested logit model is rejected. Therefore, we decided to estimate this three-level relationship using two pairs of simultaneous probit-ordered probit system equations (programmed by us in STATA). The first pair of interest is a combination of

the equation for the SEIFA level in the original location, level 1 in the nested logit (estimated using an ordered probit model), and the equation explaining the decision to move, level 2 in the nested logit (estimated using a probit model). The second pair is a combination of a selection equation for the decision to move, level 2 in the nested logit (estimated using a probit model), and the equation for the change in SEIFA resulting from the move, level 3 in the nested logit (estimated using an ordered probit model). For the latter, we explored the possibility of separately estimating three subsamples with different SEIFA levels in the original location of residence. However, some of the subsamples become fairly small and the model does not converge. For those models that do converge, no obviously different patterns appear. Therefore, we limit the joint estimation of the decision to move and change in SEIFA to the version based on the full sample.

3.2 Model specification

Based on the index of relative socio-economic disadvantage, the statistical analysis of Bill and Mitchell (2006) which uses HILDA data from 2001 to 2004 illustrates that most spatial mobility is within similarly ranked areas. That is, 30 to 40 per cent of movers in each decile move to an area within the same SEIFA group. By including social advantage/disadvantage in the original location and the moving direction in a model as described above, as well as controlling for a range of background characteristics, this study aims to reveal the moving patterns related to people of different demographic and family backgrounds. In addition, the use of two separate samples representing different populations (based on HILDA and RED, respectively) may uncover different patterns for income support recipients.

In the following subsection the variables for each of the three levels are defined. For each level there are distinct variables associated with the decision at that particular level in order to facilitate the identification of the model.

Although income unit composition and partner information regarding employment and income variables were included in the previous report, our modelling was individual-based with males and females modelled separately. In reality, however, the decision to move is usually a family decision. Estimation based on the family unit, therefore, may provide more sensible inference if the specifications are carefully designed to include all relevant information on the individual members.

Similar to conditional logit in the previous report, we propose to estimate an individual-based model similar to the modelling in the previous report, since we can include some income unit

information in this type of model as well as individual information. At the moment, we plan to estimate separate models in the three-level approaches for couples and singles, although this can only be done when using the HILDA data and not when using the RED. This is due to the lack of information on partners in the RED when the partner is not on income support.

3.3 Specification of the three levels

3.3.1 Level 1: SEIFA at original location

Level 1 models the advantage or disadvantage of the original area of residence. The dependent and independent variables used at this level are lagged variables from the previous wave of data. In addition, any variables that are used to construct the SEIFA index must be excluded from this level, as they are likely to be endogenous. This is especially the case for HILDA since it is sampled to represent the population.

The dependent variable “advantage/disadvantage of the original area of residence” as measured by SEIFA is categorised into three groups: (i) low SEIFA (deciles 1-2) representing the bottom 20 per cent of the areas, who are the most disadvantaged; (ii) mid SEIFA (deciles 3-8) representing the middle 60 per cent of the areas, who are between the most and least disadvantaged; (iii) high SEIFA (deciles 9-10) representing the top 20 per cent of the areas, who are the most advantaged.

The level 1 equation includes the following independent variables (variables marked with an asterisk (*) are used in HILDA only and those with an (#) are used in RED only):

For individual-based modelling:

- Gender
- Age
- Partnered (#)
- No spouse/skilled spouse/unskilled spouse/non-employed spouse (*)
- Labour market status: skilled/unskilled/not employed (*)
- Children in different age groups
- Housing: owner (own outright/mortgage)/(private) renter/Public Housing
- Welfare status: no welfare/type of benefit
- Background: Australian-born from Aboriginal or Torres Strait Islander (ATSI) descent/ non-ATSI Australian-born/ESB migrant/NESB migrant
- Highest education level (*)

For income unit-based modelling:

- Age of the male partner
- Children in different age groups
- Housing: owner/renter/Public Housing
- Welfare status: no welfare/type of benefit
- Couple's labour market status: skilled (at least one partner of the couple is in skilled employment)/unskilled (both partners are unskilled, or one is unskilled and the other is not employed)/not employed (both partners are not employed) (*)
- Couple's background: non-ATSI Australian-born or ESB migrant (both partners) / NESB migrant (at least one of the partners is an NESB migrant and the other is not from ATSI descent) / ATSI (at least one of the partners is from ATSI descent)
- Education of the male partner (*)

Area characteristics:

- Capital city
- ARIA (Accessibility/Remoteness Index of Australia) (*)
- Population size
- Ethnic structure of the population: percentage of NESB migrants (*)
- Interaction term: NESB with percentage of NESB migrants (*)
- Demand for labour: number of skilled/unskilled job vacancies by city or region (DEEWR provides regular state-level vacancy reports)
- Interaction term: having a skilled/unskilled job with number of skilled/unskilled job vacancies in the relevant area (*)

3.3.2 Level 2: Mobility decision

This level models the mobility decision (the decision to move or stay), which assesses the “push effect” or the factors that influence someone to move. The dependent variable at level 2 is an indicator for moving or staying.

Changes in personal/income unit circumstance are used as independent variables at this level, along with the lagged variables that relate to the circumstances in the previous period (as previously, variables marked with an asterisk (*) are used in HILDA only and those with (#) in RED only):

For individual-based modelling:

- Age

- Partnered
- No spouse/skilled spouse/unskilled spouse/non-employed spouse (*)
- Partnering changes: divorced or separated/became married
- Labour market status and changes: skilled/unskilled/not employed and changed employment/obtained a job/lost a job (*)
- Children in different age groups
- Housing: owner/(private) renter/Public Housing
- Welfare status: no welfare/type of benefit
- Change in welfare status: change of benefit type
- Background: Australian-born from ATSI descent/ non-ATSI Australian-born/ESB migrant/NESB migrant
- Highest education level (*)

For income unit-based modelling¹³:

- Age of the male partner
- Children in different age groups
- Housing: owner/(private) renter/Public Housing
- Welfare status: no income support/type of benefit
- Couple's labour market status: skilled (at least one partner of the couple is in skilled employment)/unskilled (both partners are unskilled, or one is unskilled and the other is not employed)/not employed (both partners are not employed) (*)
- Couple's background: non-ATSI Australian-born or ESB migrant (both partners) / NESB migrant (at least one of the partners is an NESB migrant and the other is not ATSI) / ATSI (at least one of the partners is from ATSI descent)
- Highest education level of the male partner (*)

Life events:

- New child
- Change of children in different age groups (#)
- Illness of family members (*)
- Victim of property crime (*)
- Gone into retirement (*)

¹³ When constructing an income unit file, the size of the sample is based on the current wave. Those who divorce or separate share the same lagged variables for level 1, whereas at level 2 we use their own age, education, occupation, country of origin, English, welfare type (not welfare change); for those who get married, lagged variables of the male partner are used for level 1.

- Lost job (*)
- Changed job (*)
- Promoted at work (*)
- Change in financial situation: improved/worse/no change (*)
- Change in personal relationship: newly single or partnered

Note: the life events in the models estimated for couples are those of the male partners when these are individual events such as losing a job.

3.3.3 Level 3: Change in SEIFA (new location compared to original location)

The model at level 3 explains the destination choice with regard to social exclusion (the choice for an area of lower or higher social advantage/disadvantage relative to the individual's starting location). This equation assesses the destination "pull effect" or the factors that induce individuals to move to a particular area.

There are two alternatives for the dependent variable at this level: (i) based on relative SEIFA (move down/same/move up independent of the SEIFA starting level); (ii) based on moving between the three groups of SEIFA levels (lowest 20 per cent, middle 60 per cent, and highest 20 per cent).

The independent variables to be included in the modelling at this level are the individual attributes after migration (current wave/year) and area differences based on comparison of area of residency before and after migration (once again, variables marked with an asterisk (*) are used in HILDA only and those with (#) in RED only):

For individual-based modelling:

- Age
- Partnered (#)
- No spouse/skilled spouse/unskilled spouse/non-employed spouse (*)
- Labour market status: skilled/unskilled/not employed (*)
- Change in employment: obtained a job/lost a job (*)
- Children in different age groups
- Housing: owner/(private) renter/Public Housing
- Welfare status: no welfare/type of benefit
- Number of years on income support (#)
- Background: ATSI descent/ non-ATSI Australian-born/ESB migrant/NESB migrant
- Highest education level (*)

For income unit-based modelling:

- Age of the male partner
- Children in different age groups
- Housing: owner/(private) renter/Public Housing
- Welfare status: no welfare/type of benefit
- Couple's labour market status: skilled (at least one partner of the couple is in skilled employment)/unskilled (both partners are unskilled, or one is unskilled and the other is not employed)/not employed (both partners are not employed) (*)
- Couple's background: non-ATSI Australian-born or ESB migrant (both partners) / NESB migrant (at least one of the partners is an NESB migrant and the other is not ATSI) / ATSI (at least one of the partners is from ATSI descent)
- Highest education level of the male partner (*)

It is necessary to make two comments with regards to the above list. First, in our previous study on location choice (Black *et al.*, 2008) the unemployment rate of each region was used as an indicator for employment opportunity, but was found to be mostly insignificant for the location decision. This could be the result of commuting to neighbouring regions, which implies that the unemployment rate of a region may not be the best way to describe the labour market conditions for individuals living in a specific location, especially when the distance to a neighbouring region is small. In particular, the local unemployment rate is greatly affected by the level of aggregation of regions (the more disaggregated, the more likely that the unemployment rates of neighbouring regions are important). As an alternative, Bradbury and Chalmers (2003) used ABS journey-to-work data collected in the 1996 Census to calculate weighted regional unemployment rates, termed 'travel region unemployment rates'. These are not very different to the unemployment rates of the regions, as they are also based on the employment status of the population in that particular area. Moreover, for the proposed analyses of this study, the local unemployment rate and the travel region unemployment rate are potentially endogenous, because the population unemployment rate is used in constructing SEIFA. Therefore, reported vacancies (which summarise the number of advertised jobs) may be a more suitable indicator of labour demand, as they are independent of the population in that area and are therefore more likely to be exogenous.

Second, in all of the above specifications, an asterisk (*) indicates the lack of information on a variable in RED. For example, occupation information is not available in RED, and so only employed and not employed states can be distinguished.

In the three-level model, the definition of dependent variables based on social mobility allows for greater flexibility when choosing independent variables, as opposed to the conditional logit model which uses the set of destinations as the dependent variable. In the latter model, for practical reasons, the independent variables must be destination specific or interacted with destination-specific variables.¹⁴ In the three-level model defined above, the location choice and the spatial dynamics of social advantage and disadvantage among individuals/income units with different profiles (such as age, family structure, ethnicity, etc.) are examined whilst controlling for area features (such as remoteness, median housing prices, ethnic concentration, job availability) which are not incorporated in SEIFA. Instead of explaining why people move to specific locations, the three-level model aims to explain why some people move to more advantaged areas whilst others move to more disadvantaged areas.

¹⁴ If an individual characteristic were to be included on its own then a parameter corresponding to each possible destination must be estimated.

4. Methodology II: Labour market outcomes and social-spatial mobility

Residential segregation of disadvantaged groups may foster a culture of poverty, and those who are most cut off from the labour market, the long-term unemployed and the lowest skilled, are likely to remain outside the mainstream of society. Thus, neighbourhood effects can contribute to a failure to achieve increased employment levels (or a failure to increase employment levels to their full potential), even in times of strong economic growth and expanding labour demand. Some researchers address this concern that area concentrations of deprivation may result in lower life chances for their residents. For example, by linking the British Household Panel Survey (BHPS) to spatial data, Buck (2001) reveals that outcomes associated with social exclusion, such as unemployment and moving in and out of poverty, are related to neighbourhood deprivation. His finding implies that spatial mobility, facilitating a move out of socioeconomic disadvantaged areas in particular, results in better socioeconomic outcomes, such as moving out of unemployment and poverty. However, using the Finnish Longitudinal Population Census, Pekkala and Tervo (2002) found that the positive effect of moving on obtaining work diminishes once endogenous selection among movers is incorporated in the modelling. This was achieved by applying a two-stage instrumental variable estimator. That is, movers are more successful in obtaining work because of unobserved factors, such as higher motivation and propensity of being re-employed. However, their study does not distinguish between moving out of or into areas of socioeconomic disadvantage.

Australian studies have shown the following. Based on HILDA data (2001-2004), Bill and Mitchell (2006) estimated the probabilities of gaining employment after migration for those who were unemployed prior to migration using a probit model. The index of relative socioeconomic disadvantage (SEIFA 2001) was included as an explanatory variable. The positive coefficient for SEIFA in their results suggests that a strong concentration of socioeconomic advantage in the destination region increases the chances of an unemployed person gaining subsequent employment. However, their study does not analyse the dynamics of moving into an area with improved socioeconomic status and the potential endogenous selection of migration is not accounted for. Both these issues are addressed in our proposed analyses.

Based on LDS data (1996-1997), Morrow's (2000) descriptive analyses show that unemployment benefit recipients are willing to move to areas with higher SEIFA, accepting

the extra cost of housing in exchange for greater access to employment. Combining LDS data (1995-2001) with geographic information derived from the 1996 ABS Census, Bradbury and Chalmers (2003) examined the determinants of mobility among working-age income support recipients and the impact of mobility on welfare payments (both the welfare receipt spell and the change in the amount of welfare income). They find that unemployment benefit recipients tend to migrate to areas with lower travel region unemployment rates; living in an area with a higher travel region unemployment rate leads to a lower likelihood of exit from welfare, and is associated with an increase in unemployment benefit receipt. Their central variable – travel region unemployment rate – is based on the unemployment rate of each region, which is an important component of the index of relative socioeconomic disadvantage (SEIFA 2001)¹⁵ and so this central variable is endogenous to SEIFA. Again, neither study analyses the dynamics of moving into an area with improved socioeconomic status nor is the potential endogenous selection of migration accounted for.

This study of social-spatial mobility aims to provide the empirical foundation for spatial targeting policies that aim to improve the social and economic outcomes of individuals (such as employment and poverty) in order to promote social cohesion. Therefore, identifying whether spatial mobility and the dynamics of socioeconomic advantage/disadvantage associated with this mobility have an impact on the labour market outcomes or welfare dependency is important.

Assuming that each individual aims to maximise his/her discounted future income or utility when making a mobility decision, people are expected to consider the potential gain and cost of a move. For example, people who are confident they will obtain a job or increase their earnings in the near future may choose to move to a more socio-economically advantaged area, where labour market conditions, amenities and other aspects of the social environment are better. By contrast, people who are retreating from the labour market or expecting a decrease in earnings may move to a more socio-economically disadvantaged area, where there are more people in a similar situation and the cost of living may be lower. Consequently, the socioeconomic direction (more or less advantage/disadvantage) of moving may be endogenous to the labour market outcomes or welfare dependency. This potential issue of the

¹⁵ We argue that the unemployment rate which is derived from the population cannot reflect the demand for labour in that area, especially in metropolitan areas where many people travel (sometimes a significant distance) to work. Instead, we suggest using data from vacancy reports.

endogenous selectivity of migration highlights the need to apply advanced modelling techniques.

To deal with these issues our analyses is carried out in two stages. The first stage models the effect of moving on employment. The bivariate probit model used in this stage allows us to determine whether internal migration leads to an improvement in employment probability or whether any effects on employment are all due to unobserved differences (for example, in ability) between movers and stayers, which could affect both employment and migration to specific regions.

The second stage of the modelling is conditional on being a mover, and investigates whether moving to areas of more or less advantage/disadvantage has an impact on the probability of being re-employed. A bivariate probit-ordered probit model is estimated to account for the potential endogeneity of the direction of moving in the re-employment equation.

HILDA and RED data sets are both used to examine this potential causal relationship between migration (breaching social segregation) and re-employment for those who are currently excluded from the labour market (that is, the unemployed or discouraged workers). Thus, the sample is restricted to those who are not in a job (not in the labour force or unemployed). Since the information that can be extracted from HILDA and RED is quite different, the specifications of the models based on these two data sets must be different. Section 4.1 discusses the specification of the two stages of the model for the general population based on HILDA data, and Section 4.2 does likewise for the welfare recipients based on RED data. Specification issues for both samples are discussed in Section 4.3.

4.1 Specification of the model for the general population (HILDA)

4.1.1 Stage 1: Migration and re-employment

The first equation uses an indicator for moving/staying as the dependent variable. The independent variables in this equation are the same as in the specification for the second level of the model in Section 3.3.2, except that the variable regarding labour market status is excluded and extra life event dummies about relationship changes are added. The dependent variable in the second equation is not employed/re-employed. The independent variables for this equation are as follows:

- Age
- Spouse: no spouse/skilled spouse/unskilled spouse/non-employed spouse
- Children in different age groups

- Housing: owner/renter/other
- Welfare status: no welfare/type of benefit
- Background: Australian-born from ATSI descent/ non-ATSI Australian-born/ESB migrant/NESB migrant
- Highest education level: using the HILDA 2001-2004, Bill and Mitchell (2006) found that the rate of mobility is highest amongst those who are well-educated, because the expected return from migration is higher
- Duration of unemployment or working experience

Area characteristics:

- ARIA (Accessibility/Remoteness Index of Australia)
- Population size
- Ethnic structure of the population: percentage of NESB migrants
- Interaction term: NESB with percentage of NESB migrants
- Demand for labour: number of skilled/unskilled job vacancies by region (DEEWR provides regular state-level vacancy reports)

4.1.2 Stage 2: Social mobility and re-employment for movers

The first equation uses a set of three outcomes in social exclusion (as measured by the SEIFA) as the dependent variable: move up (that is, improved SEIFA)/remain at the same level/move down. The independent variables in this equation are the same as in the specification for the third level of the model in Section 3.3.3, except that the variable for the labour market status is excluded.

The dependent variable in the second equation is not employed/re-employed and the independent variables are also the same as those used in the second equation of stage 1 with one additional variable: distance of the move.

4.2 Specification of the model for income support recipients (RED)

4.2.1 Stage 1: Internal migration and re-employment

The first equation uses an indicator for moving/staying as the dependent variable. The independent variables in this equation are the same as in the specification for the second level of the model in Section 3.3.2, except that the variable regarding labour market status is excluded. The dependent variable in the second equation is an indicator variable with two possible outcomes. For this dependent variable we have a choice between two alternatives (or a combination): increased income from earnings/otherwise; and left welfare due to increased

earned income or employment/otherwise. The independent variables in this equation are as follows:

- Age
- Partnered
- Children in different age groups
- Housing: owner/(private) renter/Public Housing
- Welfare status: type of benefit
- Background: Australian-born from ATSI descent/ non-ATSI Australian-born/ESB migrant/NESB migrant

Life Events:

- New child
- Change of children in different age groups
- Change of personal relationship: newly single or partnered
- Change in benefit type
- Move postcode or move in/out capital city

Area characteristics:

- Capital city
- Demand for labour: number of skilled/unskilled job vacancies by region (DEEWR provides regular state-level vacancy reports)
- Unemployment rate
- SEIFA

4.2.2 Stage 2: Social mobility and re-employment for movers

The first equation uses a set of three outcomes in social exclusion (as measured by the SEIFA) as the dependent variable: move up (that is, improved SEIFA)/remain at the same level/move down. The independent variables in this equation are the same as in the specification for the third level of the model in Section 3.3.3, except that the variable for the labour market status is excluded.

The dependent variable in the second equation is not employed/re-employed and the independent variables are also the same as those used in the second equation of stage 1.

4.3 Specification issues for both samples

If the sample sizes are sufficiently large then the above models are estimated for males and females separately. From the first stages of the models, which explain spatial mobility and

labour market performance, we expect to gain some insight into whether the move itself helps to improve labour market outcomes or whether the characteristics of movers are responsible for changes in labour market outcomes. We aim to control for the observed reasons of internal migration and individuals' human capital, and also to account for any unobserved factors that may cause endogeneity. The second stages of the models, which concern changes in area of residency's advantage/disadvantage and labour market performance, investigate whether social factors associated with location choices affect an individual's labour market behaviour. Using similar modelling strategies as in the first stages, we aim to control for the human capital of individuals, the differences between initial location and location after a move that are not reflected by SEIFA, and any unobserved factors that may cause endogeneity.

In RED, we only observe whether someone left income support without knowing the reason for leaving income support and therefore we cannot examine the effect of characteristics and circumstances on the probability of employment. Therefore, our analyses are conditional on still being on income support, where the labour market outcome of interest is experiencing increased earnings. However, we explore an alternative analysis where the outcome variable of interest is increased earnings *or* leaving income support, which is discussed in Section 6.3.

5. Results I: Spatial mobility and social exclusion

5.1 Choice of location - The conditional logit approach

In this section we extend the conditional logit analysis presented in the previous study by Black *et al.* (2008) by adding explanatory variables for SEIFA and the number of skilled and unskilled job vacancies to each analysis. The same 58 regions are used for the analyses (see Appendix Table A.3 for a list of these regions).

5.1.1 Analyses using HILDA data

The results we obtain from extending our previous conditional logit model appear very similar to those in the previous report using the first four waves of HILDA data. That is, the explanatory variables common to both reports exhibit similar effects. Following the addition of the SEIFA score to the analysis of the general population, Table 13 shows that a higher SEIFA score exerts a positive effect on the probability of choosing this location for men and women in the general population. As an alternative we also estimated a specification where indicator variables based on SEIFA, such as whether the region is in the top two or bottom two deciles of the SEIFA distribution, were added. This specification showed that areas in the top two deciles are more likely to be chosen than areas in the bottom two deciles, although only the effect of the top two deciles is significant for women (the detailed results are not presented in this report).

Table 13: Conditional logit model for location decision, choice attributes only (differences are in comparison to previous location)

	Men		Women	
	Coef.	Std. error	Coef.	Std. error
Difference in average SEIFA score/100	0.144***	0.055	0.202***	0.056
Difference in unit prices [#]	0.075	0.061	0.026	0.060
Difference in house prices [#]	-0.074***	0.028	-0.070**	0.028
A move is required	-5.029***	0.047	-5.140***	0.048
An interregional move is required	-0.900***	0.078	-0.843***	0.075
An interstate move is required	-1.872***	0.090	-1.852***	0.086
Statistical region is part of a capital city	-0.215***	0.051	-0.122**	0.051
Population size [#]	0.169***	0.026	0.170***	0.026
Difference in number of skilled vacancies [#]	0.030	0.030	0.008	0.028
Difference in number of unskilled vacancies [#]	-0.010	0.014	0.002	0.013
Number of observations	1,145,274		1,261,898	
Number of individuals	5,531		5,958	
Pseudo R-squared	0.8919		0.8975	

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

[#] prices in \$100,000; population in 100,000 persons; vacancies in 1,000 jobs.

The results in Table 13 indicate that the effects are quite similar for men and women. Higher average median house prices appear to deter choice of the associated locations, whereas the prices of units (apartments) are of the opposite sign, small and not significant. As in our earlier study, location choices which require a move are less likely to occur, particularly if the new location requires a long-distance move, such as from a capital city to outside a capital city in the same State, or even a longer-distance move between States. It appears individuals are moving away from capital cities, but toward areas with relatively large population sizes.

We extend the model in Table 13 to include a number of interaction effects of the area's characteristics with individual or income unit characteristics, and we estimate this separately for the subgroups of benefit recipients and those not on income support. The results are reported in Table 14 for men and Table 15 for women. Due to the relatively small sample size of income support recipients in HILDA, much fewer characteristics have a significant effect on location choices than for the general population. There are, however, a number of significant effects common to both groups.

The effect of a move being required to choose a specific location has very similar negative effects on the two groups (both for men and women). This effect is reinforced by the age of the individual, whereby older individuals are less likely to choose a location if a move is required than younger individuals. Male benefit recipients aged between 40 and 65 have similar additional negative effects, whereas members of the general population and female benefit recipients experience an increasing negative effect, going from age 40 to age 65 for the general population and from age 30 to age 65 for female benefit recipients. The effect is also reinforced for homeowners in both groups, with a weaker effect for male benefit recipients. The general population are also less likely to choose a location if a move is required when they have children, and the extent of this effect increases when the children reach school age. The effect for benefit recipients is not significant (except for female benefit recipients who have children aged over 15, although this is only significant at the 10% level).

If the move required is interregional, then this specific choice of location becomes even less likely for the general population, but for income support recipients the effect is not significant. For the general population, the negative effect is not as strong for those who have pre-school children and for female homeowners. The effect seems stronger for those with children over 15 years of age, although this is only significant at the 10% level for men. If an interstate move is required, there is a further negative effect for both groups (strongest for

benefit recipients), which is reinforced for those in the general population who are homeowners.

Table 14: Conditional logit model for location decision by benefit receipt – Males

	Received benefits in previous period		Received no benefits in previous period		All Males	
	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error
Difference in unit prices/100000	-0.002	0.228	-0.002	0.095	-0.008	0.087
<i>Interacted with:</i>						
Own/buying house	0.298	0.335	0.245*	0.140	0.265**	0.126
Aged over 40 years	-0.257	0.323	-0.201	0.154	-0.216	0.134
Difference in house prices/100000	-0.049	0.100	-0.017	0.041	-0.016	0.038
<i>Interacted with:</i>						
Own/buying house	-0.190	0.140	-0.065	0.058	-0.079	0.053
Aged over 40 years	0.191	0.143	0.055	0.066	0.071	0.058
Diff. in no. of skilled vacancies/1000	-0.017	0.196	0.207	0.137	0.122	0.106
<i>Interacted with:</i>						
Aged 30 to 39 years	-0.143	0.156	-0.100*	0.057	-0.105*	0.054
Aged 40 to 49 years	0.078	0.222	-0.193**	0.091	-0.165**	0.084
Aged 50 to 59 years	-0.355*	0.205	-0.010	0.115	-0.089	0.102
Aged over 60 years	0.090	0.263	-0.097	0.162	0.014	0.127
Employed in skilled job last year	0.236	0.190	-0.037	0.135	0.064	0.102
Employed in unskilled job last year	0.187	0.196	-0.193	0.139	-0.071	0.104
Unemployed in previous year	-0.116	0.196	0.134	0.210	0.049	0.150
On benefits in previous year					-0.147	0.115
On unemp.rel. benefits last year	-0.047	0.135			-0.060	0.127
Diff. in no. of unskilled vacancies/1000	0.046	0.084	-0.032	0.064	0.001	0.047
<i>Interacted with:</i>						
Aged 30 to 39 years	0.013	0.076	0.026	0.027	0.026	0.025
Aged 40 to 49 years	-0.051	0.111	0.029	0.041	0.022	0.038
Aged 50 to 59 years	0.108	0.085	-0.037	0.054	0.001	0.048
Aged over 60 years	-0.066	0.096	0.022	0.067	-0.025	0.051
Employed in skilled job last year	-0.129	0.081	-0.009	0.063	-0.049	0.044
Employed in unskilled job last year	-0.087	0.081	0.049	0.065	0.004	0.045
Unemployed in previous year	0.079	0.079	-0.068	0.101	-0.013	0.066
On benefits in previous year					0.049	0.051
On unemp.rel. benefits last year	0.025	0.060			0.023	0.056
A move is required	-3.810***	0.300	-3.981***	0.119	-3.958***	0.112
<i>Interacted with:</i>						
Has a child aged 0 to 4 years	-0.823	0.571	-0.381**	0.160	-0.427***	0.153
Has a child aged 5 to 14 years	-0.463	0.446	-0.575***	0.165	-0.580***	0.154
Has a child aged 15 to 24 years	-0.824	0.577	-0.591***	0.227	-0.625***	0.212
Aged 30 to 39 years	-0.378	0.274	-0.054	0.093	-0.101	0.089
Aged 40 to 49 years	-1.155***	0.296	-0.506***	0.120	-0.614***	0.110
Aged 50 to 59 years	-0.937***	0.283	-0.857***	0.141	-0.841***	0.121
Aged over 60 years	-1.177***	0.348	-1.146***	0.228	-1.067***	0.176
Own/buying house	-0.699**	0.297	-1.116***	0.097	-1.042***	0.092
Single	-0.332	0.278	0.363***	0.115	0.250**	0.106
A move between States or a move within State in or out of the capital city is required	-0.586	0.372	-1.058***	0.152	-0.965***	0.143
<i>Interacted with:</i>						
Has a child aged 0 to 4 years	1.156*	0.624	0.444**	0.192	0.503***	0.182
Has a child aged 5 to 14 years	0.120	0.529	0.331	0.208	0.311	0.192
Has a child aged 15 to 24 years	-0.777	0.925	-0.528*	0.320	-0.554*	0.302
Own/buying house	0.123	0.398	0.189	0.160	0.148	0.149
Single	0.166	0.384	-0.226	0.184	-0.153	0.166

Table 14: Continued

	Received benefits in previous period		Received no benefits in previous period		All Males	
	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error
A move between States is required	-2.268***	0.365	-1.576***	0.147	-1.688***	0.138
<i>Interacted with:</i>						
Own/buying house	-0.034	0.406	-0.305*	0.179	-0.242	0.163
Single	-0.232	0.430	-0.209	0.196	-0.247	0.176
The region is part of a capital city	0.264	0.344	-0.508	0.335	-0.028	0.236
<i>Interacted with:</i>						
Aged 30 to 39 years	-0.364	0.313	-0.208*	0.107	-0.222**	0.099
Aged 40 to 49 years	-0.872*	0.463	-0.452***	0.153	-0.508***	0.142
Aged 50 to 59 years	-0.636*	0.365	-0.468**	0.189	-0.441***	0.162
Aged over 60 years	-0.614	0.439	-0.177	0.356	-0.274	0.262
Was employed last year	-0.274	0.259	0.486	0.324	0.043	0.221
Was unemployed last year	0.208	0.325	1.258**	0.549	0.606**	0.296
On benefits in previous year					-0.247	0.240
On unemp.rel. benefits last year	0.066	0.236			0.119	0.253
Size of population in region	-0.010	0.139	0.077	0.048	0.069	0.045
<i>Interacted with:</i>						
Has a child aged 0 to 4 years	0.035	0.189	0.058	0.061	0.052	0.058
Has a child aged 5 to 14 years	-0.064	0.212	0.041	0.066	0.026	0.062
Has a child aged 15 to 24 years	0.504*	0.273	0.032	0.106	0.094	0.100
Aged 30 to 39 years	0.131	0.205	0.025	0.069	0.037	0.064
Aged 40 to 49 years	-0.048	0.286	0.219***	0.084	0.194**	0.080
Aged 50 to 59 years	0.111	0.228	0.100	0.105	0.069	0.094
Aged over 60 years	0.031	0.238	0.171	0.168	0.057	0.130
Difference in average SEIFA score/100	-0.264*	0.154	0.136**	0.063	0.081	0.058
Number of observations	167,961		977,256		1,145,217	
Number of individuals	1,221		4,975		5,531	
Pseudo R-squared	0.8999		0.8976		0.8974	

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

Table 15: Conditional logit model for location decision by benefit receipt – Females

	Received benefits in previous period		Received no benefits in previous period		All Females	
	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error
Difference in unit prices/100000	-0.081	0.187	0.004	0.101	-0.049	0.088
<i>Interacted with:</i>						
Own/buying house	0.814***	0.260	0.020	0.136	0.187	0.119
Aged over 40 years	-0.205	0.247	-0.101	0.153	-0.122	0.128
Difference in house prices/100000	-0.092	0.091	-0.025	0.044	-0.022	0.040
<i>Interacted with:</i>						
Own/buying house	-0.397***	0.108	0.019	0.056	-0.051	0.050
Aged over 40 years	0.180	0.113	0.025	0.062	0.049	0.056
Diff. in no. of skilled vacancies/1000	-0.241	0.158	-0.036	0.075	-0.064	0.064
<i>Interacted with:</i>						
Aged 30 to 39 years	0.079	0.132	-0.182***	0.059	-0.149***	0.054
Aged 40 to 49 years	0.056	0.135	-0.089	0.094	-0.058	0.076
Aged 50 to 59 years	0.055	0.131	-0.130	0.097	-0.086	0.078
Aged over 60 years	0.198	0.266	-0.015	0.165	0.051	0.139
Employed in skilled job last year	0.439***	0.129	0.236***	0.076	0.280***	0.064
Employed in unskilled job last year	0.132	0.115	0.047	0.081	0.085	0.064
Unemployed in previous year	0.325	0.228	0.356**	0.180	0.319**	0.138
On benefits in previous year					-0.173*	0.104
On unemp.rel. benefits last year	0.138	0.127			0.199*	0.112
Diff. in no. of unskilled vacancies/1000	0.121*	0.067	0.023	0.034	0.037	0.029
<i>Interacted with:</i>						
Aged 30 to 39 years	-0.066	0.055	0.057**	0.028	0.039	0.025
Aged 40 to 49 years	-0.027	0.058	0.008	0.044	0.001	0.035
Aged 50 to 59 years	-0.003	0.057	0.035	0.047	0.027	0.037
Aged over 60 years	-0.144	0.116	0.039	0.086	-0.016	0.069
Employed in skilled job last year	-0.180***	0.059	-0.071**	0.035	-0.095***	0.029
Employed in unskilled job last year	-0.044	0.049	-0.006	0.036	-0.024	0.028
Unemployed in previous year	-0.126	0.090	-0.092	0.085	-0.099*	0.060
On benefits in previous year					0.076*	0.043
On unemp.rel. benefits last year	-0.068	0.052			-0.085*	0.047
A move is required	-4.113***	0.267	-3.726***	0.108	-3.768***	0.101
<i>Interacted with:</i>						
Has a child aged 0 to 4 years	-0.329	0.253	-0.522***	0.151	-0.502***	0.127
Has a child aged 5 to 14 years	-0.390	0.237	-0.569***	0.151	-0.582***	0.122
Has a child aged 15 to 24 years	-0.611*	0.322	-0.573***	0.195	-0.614***	0.167
Aged 30 to 39 years	-0.584***	0.212	-0.198**	0.100	-0.267***	0.090
Aged 40 to 49 years	-0.632***	0.212	-0.811***	0.121	-0.775***	0.106
Aged 50 to 59 years	-0.958***	0.241	-1.077***	0.134	-1.077***	0.117
Aged over 60 years	-1.289***	0.316	-1.342***	0.223	-1.332***	0.182
Own/buying house	-1.236***	0.239	-1.194***	0.102	-1.155***	0.093
Single	0.368	0.232	0.230**	0.116	0.210**	0.099
A move between States or a move within State in or out of the capital city is required	-0.481	0.309	-1.244***	0.157	-1.093***	0.140
<i>Interacted with:</i>						
Has a child aged 0 to 4 years	0.231	0.296	0.421**	0.180	0.389**	0.153
Has a child aged 5 to 14 years	0.392	0.274	0.258	0.182	0.341**	0.151
Has a child aged 15 to 24 years	-0.203	0.424	-0.276	0.262	-0.249	0.223
Own/buying house	0.533	0.337	0.589***	0.165	0.492***	0.147
Single	-0.508	0.319	-0.211	0.192	-0.169	0.157

Table 15: Continued

	Received benefits in previous period		Received no benefits in previous period		All Females	
	Coef.	Std. error	Coef.	Std. error	Coef.	Std. error
A move between States is required	-2.474***	0.307	-1.399***	0.158	-1.642***	0.140
<i>Interacted with:</i>						
Own/buying house	0.345	0.332	-0.660***	0.185	-0.391**	0.161
Single	0.248	0.346	-0.118	0.210	-0.144	0.177
The region is part of a capital city	-0.032	0.278	-0.134	0.153	-0.064	0.129
<i>Interacted with:</i>						
Aged 30 to 39 years	0.005	0.231	-0.244**	0.119	-0.211**	0.105
Aged 40 to 49 years	0.098	0.268	-0.331**	0.165	-0.213	0.139
Aged 50 to 59 years	-0.029	0.281	-0.417**	0.186	-0.311**	0.155
Aged over 60 years	-0.525	0.527	-0.185	0.306	-0.313	0.261
Was employed last year	0.019	0.182	0.175	0.137	0.131	0.109
Was unemployed last year	0.555*	0.331	0.451	0.326	0.514**	0.239
On benefits in previous year					-0.174	0.210
On unemp.rel. benefits last year	-0.018	0.248			0.074	0.226
Size of population in region	0.031	0.120	0.058	0.049	0.060	0.044
<i>Interacted with:</i>						
Has a child aged 0 to 4 years	0.025	0.109	0.085	0.060	0.069	0.052
Has a child aged 5 to 14 years	0.236**	0.099	-0.003	0.061	0.045	0.051
Has a child aged 15 to 24 years	0.166	0.150	0.042	0.090	0.068	0.076
Aged 30 to 39 years	-0.136	0.146	0.153**	0.074	0.110*	0.066
Aged 40 to 49 years	-0.133	0.164	0.149	0.095	0.074	0.081
Aged 50 to 59 years	-0.075	0.164	0.137	0.099	0.068	0.081
Aged over 60 years	0.278	0.292	-0.205	0.179	-0.080	0.141
Difference in average SEIFA score/100	-0.172	0.120	0.249***	0.067	0.160***	0.059
Number of observations	269,301		992,597		1,261,898	
Number of individuals	1,878		5,162		5,958	
Pseudo R-squared	0.8988		0.9046		0.9029	

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

Older individuals in both groups (benefit recipients and those not receiving benefits) appear less likely than those aged less than 30 to be attracted to locations in capital cities. These effects are more significant for the general population than for benefit recipients, and are in fact non-existent for female benefit recipients. The size of the population in an area appears to have hardly any effect on individuals' choices, although male benefit recipients with children aged over 15, female benefit recipients with school-age children and individuals from the general population aged 40 to 49 if they are male or 30 to 39 if they are female appear somewhat more likely to choose locations with larger population sizes.

The level of SEIFA is significant for both groups (benefit recipients and those not receiving benefits), but has the opposite effect. Benefit recipients are less likely to choose a location with a higher SEIFA level, although this is insignificant for women, and individuals in the general population are more likely to choose locations with higher SEIFA. This is consistent

with the observation in Section 2 that high SEIFA locations have a smaller proportion of benefit recipients.

Male homeowners in the general population and female homeowners who are income support recipients are more attracted to areas with relatively higher median unit prices, and the latter group are negatively affected by higher median house prices. Surprisingly few of the variables related to skilled or unskilled job vacancies were significant in any of the analyses. This is similar to the lack of effect of regional unemployment rates in Black *et al.* (2008). There are a few exceptions. Individuals from the general population aged between 30 and 40 years for women and between 30 and 50 years for men are less attracted to areas with high numbers of skilled job vacancies. However, women who were employed in a skilled job last year are more likely to choose a location with a larger number of skilled job vacancies, as were women from the general population who were unemployed last year. The number of unskilled job vacancies has an effect that is just significant for female benefit recipients and women aged 30 to 39 in the general population, but this positive effect turns negative for women who were employed in a skilled job last year. Analysing all women together while including interaction variables for benefit receipt and unemployment-related benefit receipt shows that the number of skilled job vacancies has a negative effect on the probability of choosing this location for those receiving income support, which is counteracted by a positive effect for those who are receiving unemployment-related benefits. The opposite is true for the number of unskilled job vacancies. That is, it has a positive effect on the probability of choosing this location for those in receipt of an income support benefit, which is counteracted by a negative effect for those who are on unemployment-related benefits.

5.1.2 Analyses using RED data

Similar to the results using HILDA, the results obtained in this subsection also appear comparable to those in the previous report using LDS. The variables once again have similar effects. To begin, we estimate separate models for men and women using the area characteristics only. These results are presented in Table 16.

Table 16 shows that a higher SEIFA score has a negative effect on the probability of choosing this location for income support recipients (consistent with the result in the previous subsection using HILDA data). Further specifications were then estimated using alternative variables based on SEIFA, such as whether the region is in the top two or bottom two deciles of the SEIFA distribution (or the top and bottom decile) and whether the individual moves out of the top two or bottom two deciles or moves into the top two or bottom two deciles by

choosing this region (and similarly for the top and bottom decile). All these specifications show that income support recipients are more likely to move out of the top SEIFA deciles and move into the bottom deciles (again the detailed results are not presented in this report).

Table 16: Conditional logit model for location decision by gender, choice attributes only (differences are in comparison to previous location)

	Males		Females	
	Coef.	Std. error	Coef.	Std. error
Difference in average SEIFA score/100	-0.278***	0.029	-0.280***	0.028
Difference in number of skilled vacancies	0.019**	0.009	-0.004	0.009
Difference in number of unskilled vacancies	0.002	0.004	0.001	0.004
Difference in house prices #	-0.063***	0.012	-0.055***	0.011
Difference in unit prices #	0.082***	0.024	0.056**	0.023
Unemployment rate difference	0.013	0.008	0.011	0.008
A move is required	-4.792***	0.023	-4.939***	0.021
An interregional move is required	-2.016***	0.029	-2.073***	0.027
An interstate move is required	-0.032	0.035	-0.044	0.035
Statistical region is part of a capital city	-0.021	0.021	-0.013	0.021
Population size #	0.091***	0.010	0.145***	0.009
Number of observations	4,786,136		6,052,091	
Number of individuals	22,499		24,891	
Pseudo R-squared	0.8520		0.8720	

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

prices in \$100,000; population in 100,000 persons.

The effects in Table 16 are again quite similar for men and women. Higher average median house prices appear to deter choice of the associated locations, whereas the prices of units (apartments) are of the opposite sign. As in Black *et al.* 2008, location choices which require a move are less likely to occur, particularly if the new location requires a long-distance move, such as from a capital city to outside a capital city in the same State. However, increasing the moving distance even further to a move between States appears irrelevant, such that it is no less likely than an interregional move within a State. This is different to what we observed from the general population using HILDA. It appears that whether a region is in a capital city is irrelevant, but individuals appear to be moving towards areas with relatively large population sizes. Also, the number of skilled job vacancies has a positive effect on the probability of men choosing a particular area.

Table 17 reports the results for men and women where a number of interaction variables are introduced to identify differences in responses to the areas' characteristics depending on the individuals' characteristics. As in the simpler specification of the model, areas with higher SEIFA levels are less likely to be chosen by income support recipients, with this effect being larger for women. The number of skilled job vacancies slightly increases the probability of a location being chosen, but only among men.

Table 17: Conditional logit model for location decision by gender

	Males		Females	
	Coef.	Std. error	Coef.	Std. error
Difference in average SEIFA score/100	-0.229***	0.037	-0.347***	0.035
Difference in number of skilled vacancies	0.021**	0.011	0.005	0.010
Difference in number of unskilled vacancies	0.005	0.005	-0.001	0.004
Difference in house prices/100000	-0.087***	0.019	-0.076***	0.017
<i>Interacted with:</i>				
Own/buying house	0.033	0.030	-0.013	0.030
Aged over 40 years	0.031	0.027	0.054**	0.026
Difference in unit prices/100000	0.117***	0.039	0.044	0.035
<i>Interacted with:</i>				
Own/buying house	-0.089	0.066	0.040	0.069
Aged over 40 years	-0.038	0.061	0.003	0.059
Unemployment rate difference	-0.062**	0.037	-0.068	0.048
<i>Interacted with:</i>				
Aged 30 to 39 years	-0.020	0.018	-0.016	0.018
Aged 40 to 49 years	0.020	0.023	0.036	0.023
Aged 50 to 59 years	0.053**	0.027	0.009	0.025
Aged over 60 years	0.030	0.036	0.053	0.046
On benefits in previous year	0.051	0.034	0.072	0.046
On unemp.rel. benefits last year	0.034**	0.015	-0.050***	0.017
A move is required	-4.161***	0.040	-4.142***	0.043
<i>Interacted with:</i>				
Has a child aged 0 to 4 years	0.215	0.144	0.131**	0.053
Has a child aged 5 to 12 years	-0.268*	0.143	-0.317***	0.056
Has a child aged 13 to 15 years	-0.233	0.193	-0.220***	0.080
Aged 30 to 39 years	-0.155***	0.048	-0.440***	0.045
Aged 40 to 49 years	-0.545***	0.057	-0.924***	0.059
Aged 50 to 59 years	-0.976***	0.067	-1.210***	0.061
Aged over 60 years	-1.201***	0.084	-1.441***	0.094
Own/buying house	-0.001	0.061	0.123**	0.062
Have a partner on benefits	-0.523***	0.081	-0.513***	0.060
A move between States or a move within State in or out of the capital city is required	-2.110***	0.041	-2.193***	0.047
<i>Interacted with:</i>				
Has a child aged 0 to 4 years	0.275	0.178	-0.081	0.066
Has a child aged 5 to 12 years	0.021	0.177	0.048	0.070
Has a child aged 13 to 15 years	-0.080	0.249	-0.043	0.100
Own/buying house	0.102	0.073	0.264***	0.076
Have a partner on benefits	0.175*	0.101	0.182**	0.077
A move between States is required	-0.105**	0.050	-0.073	0.050
<i>Interacted with:</i>				
Own/buying house	0.157	0.111	-0.064	0.119
Have a partner on benefits	0.280**	0.129	0.178*	0.108
The region is part of capital city	0.034	0.121	-0.114	0.136
<i>Interacted with:</i>				
Aged 30 to 39 years	-0.043	0.058	-0.026	0.055
Aged 40 to 49 years	-0.119*	0.072	-0.136**	0.068
Aged 50 to 59 years	-0.155*	0.087	-0.075	0.078
Aged over 60 years	-0.434***	0.116	-0.368***	0.135
On benefits in previous year	0.022	0.113	0.091	0.133
On unemp.rel. benefits last year	0.025	0.048	0.150***	0.051

Table 17: Continued

	Males		Females	
	Coef.	Std. error	Coef.	Std. error
Size of population in region	0.106***	0.016	0.117***	0.019
<i>Interacted with:</i>				
Has a child aged 0 to 4 years	-0.022	0.054	0.015	0.021
Has a child aged 5 to 12 years	-0.033	0.053	0.033	0.022
Has a child aged 13 to 15 years	0.125	0.081	-0.036	0.033
Aged 30 to 39 years	-0.022	0.023	0.003	0.024
Aged 40 to 49 years	-0.002	0.029	-0.030	0.030
Aged 50 to 59 years	-0.099***	0.036	0.062**	0.032
Aged over 60 years	-0.121***	0.046	0.031	0.052
Number of observations	2,980,359		4,351,437	
Number of individuals	15,874		20,137	
Pseudo R-squared	0.8358		0.8704	

Note: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Median unit prices only remain relevant for men, increasing the probability of a location being chosen. Median house prices have the opposite effect of decreasing the probability of choosing a location for men and women. The effect is smaller for women over 40 years of age. Higher unemployment levels only have a negative overall effect for men, whereas for women the effect is negative but not significant. This effect is significantly weaker for men between 50 and 59 years, and for men who were on unemployment-related benefits last year. For women who were on unemployment-related benefits last year, the effect is slightly stronger.

Location choices which require a move are less likely to occur. This negative effect is reinforced for older men and women, for those with school-age children and for those with a partner on income support. For women with pre-school children the negative effect is somewhat smaller. The direction of the effect is the same for men with pre-school children, but is not significant. The negative effect is also somewhat smaller for female homeowners.

Location choices for which an interregional move is required are less likely to be chosen. This negative effect is slightly smaller for those with a partner on income support and female homeowners. Location choices for which an interstate move is required are only significantly less likely to be chosen by men. This negative effect turns positive for men and women whose partner is also receiving income support. A region being part of a capital city negatively influences the choice of a region for older benefit recipients. Women who were on unemployment-related benefits last year are more likely than others to choose a region which is part of a capital city. Regions with relatively large population sizes are more likely to be chosen than regions with smaller population sizes. Older men appear slightly less likely to

choose this type of region, but for older women there is a small effect in the opposite direction.

5.2 Choice of SEIFA, mobility and change in SEIFA

In this section we estimate the equations proposed in Section 3.3. These are estimated in pairs using bivariate probit-ordered probit specifications. The first pair of interest is a combination of the equation for the SEIFA level in the original location (ordered probit) and the equation explaining the decision to move (probit). The second pair is a combination of a selection equation for the decision to move (probit) and the equation for the change in SEIFA resulting from the move (ordered probit). These two pairs of models are considered separately in the following subsections for, first, the HILDA data and, then, the RED data.

5.2.1 SEIFA in original location – Decision to move (HILDA)

To examine the relationship between the social advantage/disadvantage of people's area of residence and their decision to move we apply a bivariate probit-ordered probit model. For the general population, we estimate the models separately for singles and couples. The results are presented in Tables 18 and 19.

Table 18: Bivariate probit-ordered probit model for decision to move and SEIFA in original location – Singles (9,661 singles)

Characteristics at time 1	Probit model: Decision to move		Ordered probit model: SEIFA in original location	
	Coef.	Std. Err.	Coef.	Std. Err.
Male	0.044	0.039	-0.075	0.044
Homeowner	-0.825***	0.035	0.167***	0.042
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	0.086	0.060	-0.116	0.060
30 to 39	-0.223***	0.070	-0.249***	0.070
40 to 49	-0.315***	0.070	-0.357***	0.071
50 to 59	-0.485***	0.073	-0.365***	0.073
60 or over	-0.469***	0.113	-0.285***	0.104
<i>Has a child aged:</i>				
0 to 4 years	0.293***	0.087	-0.124	0.087
5 to 14 years	-0.088	0.067	-0.001	0.067
15 to 24 years	-0.062	0.071	0.196***	0.069
<i>Education level (reference: Less than Year 12)</i>				
Year 12	-0.014	0.054	0.190***	0.059
Vocational qualification	0.052	0.051	0.116**	0.054
Tertiary qualification	0.064	0.059	0.339***	0.070
<i>Ethnicity (reference: Australian-born or ESB migrant)</i>				
NESB migrant	-0.081	0.069	0.376***	0.149
ATSI descent	0.067	0.099	-0.474***	0.125
<i>Employment type (reference: Not employed)</i>				
Unskilled job	0.033	0.056	0.059	0.123
Skilled job	0.057	0.061	0.271**	0.127

Table 18: Continued

Characteristics at time 1	Probit model: Decision to move		Ordered probit model: SEIFA in original location	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Type of income support received (reference: No income support received)</i>				
Unemployment-related payment	-0.091	0.061	-0.188**	0.061
Other payments	0.059	0.072	-0.192**	0.062
<i>Major life events (between time 1 and time 2)</i>				
Newborn child	0.359***	0.106		
Illness	0.012	0.04		
Victim of property crime	0.088	0.062		
Retirement	0.149	0.131		
Lost job	-0.165*	0.089		
Changed job	0.419***	0.041		
Promotion at work	0.122*	0.053		
Improved financial situation	0.265***	0.085		
Worsened financial situation	0.364***	0.082		
<i>Characteristics of original location at postcode level</i>				
Population size/100,000			-0.119***	0.015
Proportion that use public transport to work			5.214***	0.348
Number of skilled job vacancies			0.209***	0.052
No. of skilled job vac. × Emp. in skilled job			-0.020	0.062
No. of skilled job vac. × Emp. in unskilled job			0.060	0.061
Number of unskilled job vacancies			-0.105***	0.023
No. of unskilled job vac. × Emp. in unskilled job			-0.028	0.027
No. of unskilled job vac. × Emp. in skilled job			0.005	0.028
Proportion from NESB			-3.367***	0.298
Proportion from NESB × NESB migrant			-2.063***	0.496
<i>Remoteness measure (ARIA) (reference: Highly accessible)</i>				
Accessible			-0.315***	0.064
Moderately accessible			-0.698***	0.106
Remote or very remote			-0.401	0.222
Cut-off point in probit	0.545***	0.077		
1st cut-off point in ordered probit			-1.510***	0.136
2nd cut-off point in ordered probit			0.457***	0.133
Correlation (rho)	0.088***	0.020		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

In the model for singles, the correlation between the unobserved factors that motivated them to move and live in socially more advantaged areas is significant and positive, which suggests that singles living in socially advantaged areas are more mobile. This correlation is very small and insignificant in the model for couples.

These models control for the effects of major life events (events that occurred during the last year for singles, couples or the male partners of couples) on the decision to move. For singles and couples alike, having a new child (born or adopted), changing jobs or experiencing a worsened financial situation have a positive effect on the probability of moving, whilst losing

a job appears to decrease the probability of moving. For singles, an improved financial situation may motivate a move of residence, whilst for couples the retirement of the male partner may also lead to a move.

Table 19: Bivariate probit-ordered probit model for decision to move and SEIFA in original location – Couples (10,760 couples)

Characteristics at time 1	Probit model: Decision to move		Ordered probit model: SEIFA in original location	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Characteristics of male partner</i>				
Homeowner	-0.982***	0.040	0.191***	0.050
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	-0.341	0.243	-0.436	0.297
30 to 39	-0.423	0.242	-0.298	0.299
40 to 49	-0.555*	0.245	-0.229	0.300
50 to 59	-0.620*	0.246	-0.098	0.301
60 or over	-0.849***	0.257	0.051	0.306
<i>Has a child aged:</i>				
0 to 4 years	0.067	0.045	0.007	0.046
5 to 14 years	-0.148**	0.046	0.073	0.046
15 to 24 years	-0.216***	0.060	0.007	0.054
<i>Education level (reference: Less than Year 12)</i>				
Year 12	0.162**	0.069	0.282***	0.078
Vocational qualification	0.089	0.054	0.236***	0.055
Tertiary qualification	0.105*	0.061	0.493***	0.069
<i>Characteristics of partners combined</i>				
<i>Ethnicity (reference: Both Australian-born or ESB migrant)</i>				
ATSI descent (at least 1 of couple)	-0.200	0.144	-0.090	0.176
At least 1 of couple is NESB migrant & neither is ATSI	-0.096*	0.052	0.494***	0.126
<i>Employment type (reference: Both not employed)</i>				
Both in unskilled job, or 1 not emp. & 1 in unsk. job	-0.090	0.095	-0.013	0.224
At least 1 employed in skilled job	-0.003	0.090	0.463**	0.208
<i>Type of income support received (reference: Both not on income support)</i>				
At least 1 received unemployment-related payments	0.045	0.061	-0.110**	0.054
At least 1 on other benefit & no unempl.rel. payment	-0.138	0.159	-0.249**	0.118
<i>Major life events (between time 1 and time 2)</i>				
Newborn child	0.106*	0.055		
Illness of one person in couple	-0.021	0.043		
Victim of property crime (one of the couple)	0.042	0.072		
Male partner in retirement	0.441***	0.122		
Male partner lost job	-0.241**	0.110		
Male partner changed job	0.389***	0.049		
Male partner promoted at work	0.083	0.058		
Improved financial situation	0.131	0.095		
Worsened financial situation	0.149	0.108		
<i>Characteristics of original location at postcode level</i>				
Population size/100,000			-0.069***	0.017
Proportion that use public transport to work			4.720***	0.411
Proportion from NESB			-2.131***	0.400
Proportion from NESB × NESB migrant			-2.958***	0.539
Number of skilled vacancies			0.379***	0.099
No. of skilled vac. × Emp. in skilled job			-0.177*	0.102
No. of skilled vac. × Emp. in unskilled job			-0.119	0.108
Number of unskilled vacancies			-0.178***	0.043

Table 19: Continued

Characteristics at time 1	Probit model: Decision to move		Ordered probit model: SEIFA in original location	
	Coef.	Std. Err.	Coef.	Std. Err.
No. of unskilled vac. × Emp. in unskilled job			0.056	0.047
No. of unskilled vac. × Emp. in skilled job			0.067	0.044
<i>Remoteness measure (ARIA) (reference: Highly accessible)</i>				
Accessible			-0.234***	0.064
Moderately accessible			-0.586***	0.104
Remote or very remote			-0.468***	0.185
Cut-off point in probit	0.095	0.257		
1 st cut-off point in ordered probit			-1.131***	0.366
2 nd cut-off point in ordered probit			0.973***	0.365
Correlation (rho)	-0.006	0.021		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

In the equation of SEIFA level in the original location, some area characteristics which may affect the decision to move are already controlled for. The findings from these are consistent in the single and couple models, whereby residential areas with higher SEIFA are likely to have a smaller population, a smaller proportion of NESB migrants, more vacancies for skilled occupations, and fewer vacancies for unskilled occupations.

Focusing on the individual characteristics that are associated with both the choice of area of residence and the decision to move we find the following. For single and partnered males older than 30, the older they are the less likely they are to move, and older singles are more likely to live in a socially disadvantaged area. For both singles and couples, those who own their home are more likely to live in a higher SEIFA area, and due to high costs of moving they are less likely to move. The well-educated, especially those with a Tertiary qualification, are more likely to live in higher SEIFA areas. Also, the couples with a well-educated male partner are more likely to move. It is likely that their job opportunities are spread over a broader area and that the potential earning-to-moving-costs ratio is more attractive for them.

Compared to couples without children, couples with school-age (5-14) or older (15-24) children are less likely to move. Presumably, these parents are seeking to maintain a stable education and community environment for their children. Single parents with young (0-4) children are more likely to move compared to their counterparts without children. Raising children of a young age can be demanding in terms of finances and time, and single parents likely need to choose areas with low living costs or areas that allow them to juggle childcare and other activities. The results also show that single parents with older children are more

likely to live in an area with a higher SEIFA, which may indicate that this group is mostly comprised of divorced parents with older children who continue to live in the areas they lived in before the divorce.

Compared to Australian-born and ESB migrants, NESB migrants (single individuals or couples with at least one partner from NESB origin) are more likely to reside in higher SEIFA areas. In contrast, single individuals from an ATSI background are more likely to live in socially disadvantaged areas. We also find that couples with an NESB background are less likely to move.

In comparison to those not employed, individuals working in a skilled job are found to be more likely to live in an area of higher SEIFA. For those receiving income support (single individuals or couples with at least one receiving income support), we find they are more likely to reside in lower SEIFA areas. Since such welfare recipients are only a small group in the HILDA data, we shall later, in Section 5.2.3, focus more on this group using the RED data.

5.2.2 Decision to move – Change in SEIFA (HILDA)

In this section we apply a bivariate probit-ordered probit model with partial observability to study the relationship between the decision to move and the tendency of moving to more advantaged/disadvantaged locations. The results we observe, whereby no significant correlation is found in the model for couples or singles, suggest that there are no unobserved factors affecting the desire to live in more socially advantaged areas (or need to live in less socially advantaged areas) as well as providing an incentive to move (see Tables 20 and 21).

Table 20: Bivariate probit-ordered probit model for decision to move and change in SEIFA level – Singles (9,661 singles)

	Probit model: Decision to move ^a		Ordered probit model: Change in SEIFA ^b	
	Coef.	Std. Err.	Coef.	Std. Err.
Male	0.037	0.040	-0.010	0.031
Homeowner	-0.843***	0.036	-0.037	0.033
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	0.105*	0.061	-0.150***	0.060
30 to 39	-0.196***	0.071	-0.176***	0.063
40 to 49	-0.302***	0.070	-0.124**	0.059
50 to 59	-0.480***	0.073	-0.131**	0.056
60 or over	-0.479***	0.114	-0.166***	0.066
<i>Has a child aged:</i>				
0 to 4 years	0.297***	0.088	-0.100	0.095
5 to 14 years	-0.114	0.068	-0.021	0.053
15 to 24 years	-0.068	0.072	0.018	0.044

Table 20: Continued

	Probit model: Decision to move ^a		Ordered probit model: Change in SEIFA ^b	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Education level (reference: Less than Year 12)</i>				
Year 12	0.002	0.054	0.011	0.043
Vocational qualification	0.051	0.051	0.018	0.037
Tertiary qualification	0.121**	0.060	-0.063	0.044
<i>Ethnicity (reference: Australian-born or ESB migrant)</i>				
NESB migrant	0.105	0.138	0.104**	0.050
ATSI descent	0.048	0.102	-0.029	0.105
<i>Employment type (reference: Not employed)</i>				
Unskilled job	-0.095	0.122	0.073	0.048
Skilled job	0.143	0.121	0.043	0.051
<i>Type of income support received (reference: No income support received)</i>				
Unemployment-related payment	-0.104	0.062	0.031	0.049
Other payments	0.060	0.072	-0.002	0.085
<i>Major life events (between time 1 and time 2)</i>				
Newborn child	0.326***	0.107		
Illness	0.009	0.040		
Victim of property crime	0.089	0.062		
Retirement	0.137	0.131		
Lost job	-0.183**	0.090		
Changed job	0.431***	0.041		
Promotion at work	0.128**	0.054		
Improved financial situation	0.258***	0.086		
Worsened financial situation	0.363***	0.083		
<i>Characteristics of original location at postcode level</i>				
Population size/100,000	0.010	0.012		
Proportion that use public transport to work	-0.773***	0.253		
Number of skilled vacancies	0.096*	0.052		
No. of skilled vac. × Emp. in skilled job	-0.117*	0.060		
No. of skilled vac. × Emp. in unskilled job	-0.128**	0.061		
Number of unskilled vacancies	-0.032	0.024		
No. of unskilled vac. × Emp. in unskilled job	0.063**	0.028		
No. of unskilled vac. × Emp. in skilled job	0.040	0.027		
Proportion from NESB	0.040	0.217		
Proportion from NESB × NESB migrant	-0.567	0.456		
<i>Remoteness measure (ARIA) (reference: Highly accessible)</i>				
Accessible	0.003	0.056		
Moderately accessible	0.012	0.102		
Remote or very remote	0.067	0.141		
Constant	0.577***	0.125		
1 st cut-off point in ordered probit			-1.850***	0.075
2 nd cut-off point in ordered probit			1.637***	0.075
Correlation (rho)	-0.014	0.020		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

^a time-varying variables use values from time 1.

^b time-varying variables use values from time 2.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

Table 21: Bivariate probit-ordered probit model for decision to move and change in SEIFA level – Couples (10,760 couples)

	Probit model: Decision to move ^a		Ordered probit model: Change in SEIFA ^b	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Characteristics of male partner</i>				
Homeowner	-0.991***	0.040	0.118*	0.067
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	-0.302	0.244	0.304	0.491
30 to 39	-0.376	0.242	0.262	0.489
40 to 49	-0.521**	0.245	0.274	0.489
50 to 59	-0.573**	0.247	0.161	0.489
60 or over	-0.798***	0.258	0.191	0.490
<i>Has a child aged:</i>				
0 to 4 years	0.065	0.045	0.030	0.053
5 to 14 years	-0.154***	0.046	-0.049	0.040
15 to 24 years	-0.216***	0.060	0.079**	0.036
<i>Education level (reference: Less than Year 12)</i>				
Year 12	0.176***	0.069	-0.037	0.073
Vocational qualification	0.093*	0.054	-0.008	0.044
Tertiary qualification	0.139**	0.061	-0.053	0.051
<i>Characteristics of partners combined</i>				
<i>Ethnicity (reference: Both Australian-born or ESB migrant)</i>				
ATSI descent (at least 1 of couple)	-0.212	0.145	0.189	0.123
At least 1 of couple is NESB migrant & neither is ATSI	0.101	0.106	0.050	0.048
<i>Employment type (reference: Both not employed)</i>				
Both in unskilled job, or 1 not emp. & 1 in unsk. job	-0.320	0.216	0.095	0.084
At least 1 employed in skilled job	-0.034	0.194	0.087	0.083
<i>Type of income support received (reference: Both not on income support)</i>				
At least 1 received unemployment-related payments	0.030	0.061	-0.042	0.061
At least 1 on other benefit & no unempl.rel. payment	-0.143	0.156	-0.050	0.200
<i>Major life events (between time 1 and time 2)</i>				
Newborn child	0.104*	0.055		
Illness	-0.018	0.043		
Victim of property crime	0.039	0.073		
Retirement	0.429***	0.123		
Lost job	-0.224**	0.111		
Changed job	0.382***	0.049		
Promotion at work	0.084	0.058		
Improved financial situation	0.139	0.096		
Worsened financial situation	0.147	0.110		
<i>Characteristics of original location at postcode level</i>				
Population size/100,000	0.037***	0.012		
Proportion that use public transport to work	-0.405	0.297		
Number of skilled vacancies	-0.025	0.101		
No. of skilled vac. × Emp. in skilled job	0.028	0.104		
No. of skilled vac. × Emp. in unskilled job	0.011	0.115		
Number of unskilled vacancies	0.010	0.044		
No. of unskilled vac. × Emp. in unskilled job	0.015	0.050		
No. of unskilled vac. × Emp. in skilled job	-0.008	0.045		
Proportion from NESB	0.141	0.268		
Proportion from NESB × NESB migrant	-0.823*	0.426		

Table 21: Continued

	Probit model: Decision to move ^a		Ordered probit model: Change in SEIFA ^b	
	Coef.	Std. Err.	Coef.	Std. Err.
Remoteness measure (ARIA) (<i>reference: Highly accessible</i>)				
Accessible	0.031	0.056		
Moderately accessible	0.159	0.110		
Remote or very remote	-0.008	0.146		
Constant	0.210	0.314		
1 st cut-off point in ordered probit			-1.597***	0.494
2 nd cut-off point in ordered probit			2.396***	0.496
Correlation (rho)	0.037	0.026		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

^a time-varying variables use values from time 1.

^b time-varying variables use values from time 2.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4. ‘Skilled job’ defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an ‘Unskilled job’.

In addition to the variables in the decision-to-move equation in the previous section, we include some postcode level characteristics for the original location in order to capture “push” effects. The results reveal that single individuals are less likely to move if they live in a place where a larger proportion of people use public transport to travel to work (which is likely to reflect better local public transport services). For couples, those who live in areas with larger populations are more likely to move, and it appears that NESB migrants tend to prefer to live in areas with higher proportions of NESB residents. The effects of other factors are very similar to what we found in the last subsection. Note that the time-varying variables take their values from time 1 (which is at the start of the period in which the decision to move is measured) in the decision to move equation and then take their values from time 2 (which is at the end of this period) in the change in SEIFA equation.

We find that very few variables are significant in the change in SEIFA equation, as the subsamples of movers who are included in this equation are rather small. What we do find though is that singles older than 20 are less likely to move upwards in terms of SEIFA, but that this is not the case for couples. Also, couples with a child aged between 15 and 24 or owning a home are more likely to move to higher SEIFA areas. Interestingly, single NESB migrants are more likely to move to more socially advantaged areas compared to their Australian-born and ESB counterparts.

5.2.3 SEIFA in original location – Decision to move (RED)

In the RED data we only have information for individuals who are receiving income support, and only have information on their partners if their partners are also receiving income support. For the income support recipients, therefore, instead of separately modelling single individuals and couples, we model males and females separately. We find that the correlations between the decision to move and the SEIFA levels of residence are positive and significant for both males and females. This suggests that income support recipients living in more socially advantaged areas are more mobile (see Tables 22 and 23).

Similar to the models for the general population, these models also control for the effects of major life events for income support recipients which may affect the recipients' needs and desires to move. We find that having a newborn child, a change of relationship and a change in benefit type motivate male and female welfare recipients to change their residence location. Furthermore, consistent with the findings in HILDA, socially advantaged areas are associated with a lower density of population, more job opportunities for skilled occupations and less job opportunities for unskilled occupations. Also, the results from both male and female models suggest that living in a capital city provides a broader scope to move and a better chance of living in a more socially advantaged area.

We next consider the effects of individual characteristics. Similar to the results found for the general population using HILDA, income support recipients (males and females alike) are less likely to move the older they are. Furthermore, those older than 60 (who are most likely pensioners) are the most likely to live in a socially advantaged area. Among other age groups, middle-aged women (40-49 years) are relatively more likely to live in areas of higher SEIFA, whilst the opposite is true for middle-aged men. Since the age range 40-49 years is often the most important stage for one's career and a stage of heavy family responsibilities, as traditional main breadwinners, men being on income support at such an age implies strong social disadvantage.

The results reveal that, compared to those who own their home, welfare recipients who live in Public Housing are much less mobile and much more likely to be living in lower SEIFA areas. By contrast, those in privately rented homes are the most mobile and they are the most likely to be living in higher SEIFA areas. For both male and female income support recipients, those who have a partner are less mobile. Interestingly, we find that compared to their single counterparts, partnered males are more likely to live in higher SEIFA areas, whilst partnered females are more likely to live in lower SEIFA areas. The findings for children are

consistent for male and female welfare recipients. Compared to those without children or with children older than 12, those who have young children are more likely to be living in lower SEIFA areas. We also observe that, similar to the general population, those with school-age (5-12) children are less mobile and those with very young (0-4) children are more mobile.

Table 22: Bivariate probit-ordered probit model for decision to move and SEIFA in original location – Males (601,520 observations on 176,335 men)

Characteristics at time 1	Ordered probit model: SEIFA in original location		Probit model: Decision to move	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	-0.026**	0.011	0.286***	0.010
20 to 29	0.059***	0.009	0.237***	0.008
30 to 39	0.020**	0.009	0.140***	0.008
50 to 59	0.057***	0.009	-0.094***	0.009
60 or over	0.166***	0.010	-0.129***	0.010
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	-0.484***	0.012	0.147***	0.011
ESB migrant	0.031***	0.011	0.094***	0.010
NESB migrant	-0.434***	0.009	-0.037***	0.008
Partnered	-0.021***	0.008	-0.121***	0.008
<i>Has a child aged:</i>				
0 to 4 years	-0.072***	0.016	0.110***	0.016
5 to 12 years	-0.040***	0.014	-0.027	0.017
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	0.048***	0.009	0.696***	0.008
Private renter	0.100***	0.007	0.874***	0.006
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	-0.117***	0.011	0.248***	0.011
DSP	-0.080***	0.012	0.061***	0.012
PPS no work requirement	-0.148***	0.020	-0.014	0.020
PPS and work requirement	-0.008	0.028	-0.092***	0.034
PPP no work requirement	-0.003	0.023	-0.056**	0.025
PPP and work requirement	0.211***	0.049	-0.145**	0.066
<i>Characteristics of original location at postcode level</i>				
Lives in a capital city	0.355***	0.006	0.107***	0.005
Population/100,000	-0.074***	0.003		
Number of skilled vacancies/1000	0.223***	0.003		
Number of unskilled vacancies/1000	-0.093***	0.001		
<i>Major life events (between time 1 and time 2)</i>				
Newborn child			0.074***	0.021
New children aged 5 to 12 years			0.010	0.019
No more children aged 5 to 12 years			0.209***	0.022
Newly single			0.772***	0.018
Newly partnered			0.586***	0.016
Change in type of income support received			0.211***	0.009
1 st cut-off point in ordered probit	-0.724***	0.016		
2 nd cut-off point in ordered probit	1.161***	0.016		
Cut-off point in probit			1.870***	0.013
Correlation (rho)	0.039***	0.003		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4.

Table 23: Bivariate probit-ordered probit model for decision to move and SEIFA in original location – Females (766,516 observations on 204,003 women)

Characteristics at time 1	Ordered probit model: SEIFA in original location		Probit model: Decision to move	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	-0.178***	0.010	0.326***	0.010
20 to 29	-0.067***	0.008	0.225***	0.007
30 to 39	-0.009	0.008	0.116***	0.007
50 to 59	-0.004	0.008	-0.016**	0.008
60 or over	0.128***	0.011	-0.091***	0.013
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	-0.461***	0.011	0.092***	0.010
ESB migrant	0.027***	0.010	0.073***	0.009
NESB migrant	-0.420***	0.008	-0.100***	0.006
Partnered	-0.081***	0.008	-0.115***	0.007
<i>Has a child aged:</i>				
0 to 4 years	-0.091***	0.007	0.099***	0.006
5 to 12 years	-0.072***	0.006	-0.082***	0.006
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	0.049***	0.008	0.794***	0.007
Private renter	0.073***	0.006	0.913***	0.005
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	0.007	0.010	0.207***	0.009
DSP	0.009	0.010	-0.005	0.009
PPS no work requirement	0.040***	0.011	0.035***	0.010
PPS and work requirement	0.179***	0.013	-0.032**	0.014
PPP no work requirement	0.014	0.012	-0.052***	0.012
PPP and work requirement	0.092***	0.020	-0.076***	0.025
<i>Characteristics of original location at postcode level</i>				
Lives in a capital city	0.305***	0.006	0.116***	0.005
Population/100,000	-0.054***	0.003		
Number of skilled vacancies/1000	0.205***	0.003		
Number of unskilled vacancies/1000	-0.089***	0.001		
<i>Major life events (between time 1 and time 2)</i>				
Newborn child			0.068***	0.007
New children aged 5 to 12 years			0.008	0.007
No more children aged 5 to 12 years			0.135***	0.008
Newly single			0.535***	0.013
Newly partnered			0.421***	0.012
Change in type of income support received			0.195***	0.007
1 st cut-off point in ordered probit	-0.769***	0.013		
2 nd cut-off point in ordered probit	1.128***	0.013		
Cut-off point in probit			1.860***	0.010
Correlation (rho)	0.043***	0.002		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4.

What we find for migrants on income support is very different to what was found among the general population in HILDA. Compared to the Australian-born, ESB migrants are more likely to be living in higher SEIFA areas and are also more mobile; NESB migrants are more likely to be living in more socially disadvantaged areas and are less mobile. In addition,

welfare recipients from ATSI descent are the most likely to live in disadvantaged areas, but they are found to be more mobile than the other Australian-born welfare recipients.

As for the types of income support being received, males and females on unemployment-related benefits are significantly more mobile than their counterparts on other types of benefits. At the same time, males in unemployment-related benefits are more likely to be living in lower SEIFA areas. Males and females receiving parenting payments with a work requirement are more likely to be living in more socially advantaged areas.¹⁶ It should be noted that relatively few men receive a parenting-related payment, so the estimates for men are based on a small number of observations.

5.2.4 Decision to move – Change in SEIFA (RED)

Once again, the relationships between income support recipients' decision to move and the direction of movement in terms of SEIFA are estimated separately for males and females. The results are reported in Tables 24 and 25. We find that younger male and female welfare recipients are more likely to move and to move to higher SEIFA areas. Compared to the Australian-born, NESB migrants are less likely to move. When they move, however, they are more likely to move socially upwards. Similar behaviours are found for females who are receiving parenting payments with a work requirement. It is worth noting that welfare recipients in a privately rented home are more likely to move and are likely to move downwards to more socially excluded areas relative to their counterparts in Public Housing. Also, income support recipients who reside in a capital city are more likely to move and to move to lower SEIFA areas as well.

¹⁶ This work requirement was introduced in July 2006 for partnered parents with children aged 6 and over and single parents with children aged 8 and over.

Table 24: Bivariate probit-ordered probit model for decision to move and change in SEIFA level – Males (599,381 observations on 176,118 men)

Characteristics at time 1	Probit model: Decision to move		Ordered probit model: Change in SEIFA	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	0.288***	0.011	0.039***	0.013
20 to 29	0.238***	0.008	0.024**	0.010
30 to 39	0.140***	0.008	0.015	0.010
50 to 59	-0.096***	0.009	0.000	0.011
60 or over	-0.129***	0.010	-0.024	0.016
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	0.135***	0.011	0.010	0.009
ESB migrant	0.090***	0.010	0.017*	0.010
NESB migrant	-0.042***	0.008	0.037***	0.009
Partnered	-0.121***	0.008	-0.019*	0.011
<i>Has a child aged:</i>				
0 to 4 years	0.113***	0.017	-0.004	0.021
5 to 12 years	-0.023	0.017	0.001	0.020
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	0.699***	0.008	-0.031	0.022
Private renter	0.881***	0.006	-0.050**	0.024
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	0.245***	0.011	-0.032*	0.016
DSP	0.052***	0.012	-0.014	0.016
PPS no work requirement	-0.019	0.020	0.015	0.028
PPS and work requirement	-0.095***	0.034	0.039	0.054
PPP no work requirement	-0.069***	0.025	0.000	0.038
PPP and work requirement	-0.139**	0.066	0.103	0.113
Lives in a capital city	0.114***	0.005	-0.066***	0.007
<i>Major life events (between time 1 and time 2)</i>				
Newborn child	0.070***	0.021		
New children aged 5 to 12 years	0.009	0.019		
No more children aged 5 to 12 years	0.206***	0.022		
Newly single	0.772***	0.018		
Newly partnered	0.586***	0.016		
Change in type of income support received	0.213***	0.009		
Constant in probit	-1.884***	0.013		
1 st cut-off point in ordered probit			-0.818***	0.067
2 nd cut-off point in ordered probit			0.621***	0.067
Correlation (rho)	-0.021	0.029		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4.

Table 25: Bivariate probit-ordered probit model for decision to move and change in SEIFA level – Females (764,851 observations on 203,861 women)

Characteristics at time 1	Probit model: Decision to move		Ordered probit model: Change in SEIFA	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	0.326***	0.010	0.047***	0.013
20 to 29	0.226***	0.008	0.036***	0.010
30 to 39	0.116***	0.007	0.022**	0.009
50 to 59	-0.017**	0.008	0.006	0.012
60 or over	-0.095***	0.013	-0.020	0.022
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	0.080***	0.010	0.004	0.008
ESB migrant	0.071***	0.009	0.014	0.010
NESB migrant	-0.104***	0.006	0.041***	0.008
Partnered				
<i>Has a child aged:</i>				
0 to 4 years	-0.117***	0.007	0.010	0.010
5 to 12 years	0.101***	0.006	-0.011	0.009
	-0.082***	0.006	0.012	0.008
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	0.794***	0.007	-0.035*	0.020
Private renter	0.917***	0.005	-0.047**	0.021
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	0.207***	0.009	0.017	0.014
DSP	-0.007	0.009	0.006	0.013
PPS no work requirement	0.034***	0.010	0.014	0.015
PPS and work requirement	-0.030**	0.014	0.009	0.023
PPP no work requirement	-0.054***	0.012	0.017	0.017
PPP and work requirement	-0.074***	0.025	0.109**	0.046
Lives in a capital city	0.121***	0.005	-0.056***	0.006
<i>Major life events (between time 1 and time 2)</i>				
Newborn child	0.068***	0.007		
New children aged 5 to 12 years	0.008	0.007		
No more children aged 5 to 12 years	0.134***	0.009		
Newly single	0.538***	0.013		
Newly partnered	0.416***	0.012		
Change in type of income support received	0.195***	0.007		
<hr/>				
Constant in probit	-1.871***	0.011		
1 st cut-off point in ordered probit			-0.749***	0.056
2 nd cut-off point in ordered probit			0.753***	0.056
Correlation (rho)	0.013	0.024		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. For definitions of abbreviations used refer to the List of Abbreviations on page 4.

6. Results II: Labour market outcomes and social-spatial mobility

In this section we first aim to explore the effects of moving residence on the probability of employment or the extent of employment as measured by earnings. As described in Section 4, this can be achieved by estimating bivariate probit models. We then proceed to focus on those individuals who have moved, and examine the effect of the direction of change in SEIFA on the probability of employment or the extent of employment as measured by earnings. This is achieved by estimating bivariate probit-ordered probit simultaneous models, where the probit equations examine the probability of employment or probability of an increase in earnings (comparing before and after the move) and the ordered probit equations examine the change in SEIFA levels resulting from the move (down, same or up).

All models are estimated separately for men and women, and given the focus on re-employment (which is an individual outcome rather than an income unit outcome) it is not appropriate to subdivide the sample into couples and singles as was done previously. In the following subsections we estimate these two models for the HILDA and RED data in turn.

6.1 Decision to move – Probability of re-employment (HILDA)

For this analysis we select a subsample from the HILDA data – whereby, only individuals who are not employed are selected. For these individuals, we observe whether they moved between this period (time 1) and the next period (time 2), and we observe whether they are employed in the next period (time 2). Some individuals are not employed for a number of waves and they appear in the analysis more than once (once for each wave in which they were not employed). These repeated observations for the same individuals are, of course, correlated, and so we use the “cluster” command in STATA to correct the estimated standard errors on the parameters.

The results are presented in Tables 26 and 27. The number of women in the sample is much larger than the number of men, due to the larger number of working-age women out of the labour force.

The results for men and women are quite different on a number of points, although there are a number of characteristics for which they have very similar effects. We first discuss the results from the decision to move as this feeds into the employment equation. As observed in several of the earlier analyses, being a homeowner reduces individuals’ mobility. This effect is large for both men and women. It is also the case that older men and women are less likely to move.

**Table 26: Bivariate probit model for decision to move and probability of re-employment
– Males (1,927 observations on 1,058 non-employed men)**

Characteristics at time 1	Probit model: Re-employment		Probit model: Decision to move	
	Coef.	Std. Err.	Coef.	Std. Err.
Homeowner	-0.142	0.159	-0.811***	0.084
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	-0.109	0.158	0.056	0.138
30 to 39	-0.537***	0.157	-0.131	0.150
40 to 49	-0.429***	0.172	-0.383**	0.156
50 to 59	-0.655***	0.165	-0.445***	0.156
<i>Partner's employment type (reference: No partner)</i>				
Not employed	-0.223*	0.133	0.123	0.122
Unskilled job	0.207	0.161	0.029	0.157
Skilled job	-0.007	0.147	0.100	0.155
<i>Has a child aged:</i>				
0 to 4 years	0.402**	0.171	-0.035	0.152
5 to 14 years	-0.118	0.130	-0.146	0.123
15 to 24 years	-0.054	0.139	-0.255	0.171
<i>Education level (reference: Less than Year 12)</i>				
Year 12	0.242*	0.128	0.191*	0.115
Vocational qualification	0.214**	0.106	0.129	0.096
Tertiary qualification	0.173	0.148	0.265*	0.136
<i>Ethnicity (reference: Australian-born or ESB migrant)</i>				
NESB migrant	-0.149	0.273	0.168	0.294
ATSI descent	-0.029	0.228	-0.155	0.251
<i>Type of income support received (reference: No income support received)</i>				
Unemployment-related payment	-1.023***	0.109	-0.073	0.107
Other payments	-1.117***	0.125	-0.047	0.107
Non-work duration	-2.560***	0.152		
<i>Major life events (between time 1 and time 2)</i>				
Relationship change			0.263*	0.137
Newborn child			0.240	0.179
Illness			-0.042	0.090
Victim of property crime			0.020	0.129
Improved financial situation			0.403**	0.200
Worsened financial situation			0.486***	0.150
<i>Characteristics of location at postcode level #</i>				
Population size/100,000	0.062**	0.027	0.021	0.026
Proportion that use public transport to work	-1.178*	0.693	-0.645	0.713
Proportion from NESB	0.050	0.609	-0.685	0.554
Proportion from NESB × being NESB migrant	0.660	0.857	-0.130	0.968
Number of skilled vacancies	-0.104**	0.046	0.075	0.050
Number of unskilled vacancies	0.036*	0.019	-0.021	0.023
<i>Remoteness measure (ARIA) (reference: Highly accessible)</i>				
Accessible	-0.263**	0.124	-0.063	0.113
Moderately accessible	-0.072	0.188	0.354*	0.189
Remote or very remote	0.278	0.433	-0.319	0.407
Moved between time 1 and time 2	-0.080	0.612		
Constant	2.389***	0.310	-0.505***	0.193
Correlation (rho)	0.101	0.339		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

variables use values from time 1 for move equation and time 2 for employment equation.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. Re-employment is measured at time 2. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

Table 27: Bivariate probit model for decision to move and probability of re-employment – Females (4,636 observations on 2,101 non-employed women)

Characteristics at time 1	Probit model: Re-employment		Probit model: Decision to move	
	Coef.	Std. Err.	Coef.	Std. Err.
Homeowner	-0.399***	0.081	-0.768***	0.057
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	-0.389***	0.121	0.038	0.115
30 to 39	-0.565***	0.123	-0.174	0.121
40 to 49	-0.695***	0.129	-0.124	0.123
50 to 59	-1.064***	0.126	-0.507***	0.125
<i>Partner's employment type (reference: No partner)</i>				
Not employed	-0.255***	0.100	0.097	0.088
Unskilled job	-0.187**	0.089	-0.108	0.090
Skilled job	-0.295***	0.084	-0.079	0.082
<i>Has a child aged:</i>				
0 to 4 years	-0.151**	0.072	0.047	0.072
5 to 14 years	0.007	0.064	-0.146**	0.061
15 to 24 years	-0.103	0.074	-0.278***	0.078
<i>Education level (reference: Less than Year 12)</i>				
Year 12	0.011	0.074	-0.056	0.075
Vocational qualification	0.160***	0.064	0.065	0.065
Tertiary qualification	0.315***	0.085	0.117	0.081
<i>Ethnicity (reference: Australian-born or ESB migrant)</i>				
NESB migrant	0.000	0.159	-0.270	0.181
ATSI descent	-0.300**	0.135	-0.169	0.128
<i>Type of income support received (reference: No income support received)</i>				
Unemployment-related payment	-0.487***	0.075	-0.163**	0.066
Other payments	-0.350***	0.121	0.033	0.103
Non-work duration	-2.705***	0.162		
<i>Major life events (between time 1 and time 2)</i>				
Relationship change			0.385***	0.081
Newborn child			0.285***	0.075
Illness			0.004	0.053
Victim of property crime			0.070	0.097
Improved financial situation			0.219*	0.128
Worsened financial situation			0.308***	0.112
<i>Characteristics of location at postcode level #</i>				
Population size/100,000	0.013	0.016	-0.006	0.017
Proportion that use public transport to work	-0.247	0.447	-0.944**	0.451
Proportion from NESB	-0.411	0.424	0.166	0.375
Proportion from NESB × being NESB migrant	-0.337	0.552	0.283	0.590
Number of skilled vacancies	0.038	0.031	0.063*	0.033
Number of unskilled vacancies	-0.015	0.014	-0.015	0.014
<i>Remoteness measure (ARIA) (reference: Highly accessible)</i>				
Accessible	0.052	0.075	-0.026	0.074
Moderately accessible	-0.119	0.136	0.146	0.135
Remote or very remote	0.328	0.202	0.137	0.201
Moved between time 1 and time 2	-1.253***	0.177		
Constant	3.020***	0.185	-0.373***	0.143
Correlation (rho)	0.991***	0.245		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

variables use values from time 1 for move equation and time 2 for employment equation.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. Re-employment is measured at time 2. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

The age of children is significant for women with school-aged children and children over 15 years of age, reducing the probability of moving. Men with a Tertiary education or who completed Year 12 appear somewhat more likely to move than men with lower education levels, and female recipients of unemployment-related income support are less likely to move. Changes in individuals' circumstances affect both male and female mobility; the probability of moving increases for those who either enter or exit a relationship, women with a newborn child, and those with a change in their financial situation (although an improved situation is not significant for women). A small number of the current area's characteristics also appear to affect the probability of moving. For women, a larger proportion of the population that uses public transport for commuting to work reduces the probability of moving, whereas men who live in an area in outer regional Australia (that is a moderately accessible area) are more likely to move. We also find a positive correlation of the probability of moving with the number of skilled job vacancies in a region for women. Overall, the reference woman is more likely to move than the reference man (as can be observed from the size of the constant terms in the models).

The results from the employment equation are quite different for men and women. The age effect is similar, with increased age reducing the probability of employment. Having a non-employed partner compared to not having a partner also has a similar effect for men and women, with it reducing the probability of their own employment. However, for women the type of employment of the partner is relevant, where a partner in skilled employment reduces her probability of working by more than having a partner in unskilled employment. For men, neither of these two variables is significant, and the effect of a partner in unskilled employment is positive and the effect of a partner in skilled employment is negative, but very small. The effect of education is larger for women than for men, and being from ATSI descent is only negatively significant for women.

Men and women who received unemployment-related income support or other benefits at time 1 are found to be less likely to be re-employed. Similarly, those who have been non-employed for a longer period of time are less likely to be employed at time 2. None of the area characteristics are observed to affect the probability of female employment, whereas a number of these characteristics do affect male re-employment rates. The probability of employment increases with population size and with the number of unskilled job vacancies, perhaps reflecting the presence of relevant job opportunities. It decreases with the number of

skilled job vacancies, with the proportion of the population that uses public transport to travel to work, and is lower in less accessible regions (accessible versus highly accessible).

For men, there appears to be no direct effect of having moved nor is there a significant correlation between the error terms (unobserved heterogeneity) in the two equations. For women, there is a large direct negative effect of moving, and a strong positive correlation in the unobserved heterogeneity associated with the probability of employment and mobility.

Overall, the reference woman is more likely to be re-employed than the reference man (as can be observed from the constant terms in the models).

6.2 Movers: Change in SEIFA – Probability of re-employment (HILDA)

For the analyses described in this subsection only those who were not employed at time 1 and did move between time 1 and time 2 are selected. After subdividing the HILDA sample into men and women, we find the sample to be too small for such an analysis (particularly for men) and as a result there are few significant parameters estimated in Tables 28 and 29. Due to its size, the RED data is better suited for this specific analysis, although there are fewer individual characteristics available.

Discussing the change in SEIFA equation first, we find the following. Men aged 20 to 29 are more likely to move down in SEIFA level compared to older age groups. Men from ATSI descent are more likely to move up. However, given the extremely small sample size this estimated effect is likely to be based on very few individuals. Women with a Tertiary education and female NESB migrants are more likely to move up in SEIFA level than other groups, whereas women with school-aged children are more likely to move down in SEIFA level. All female effects are at the 10%-level of significance only.

Regarding the employment equation, we find negative effects similar to those in the previous subsection for men and women who are in receipt of unemployment-related income support and other benefits, and for the duration of non-employment. Not surprisingly for women, the presence of pre-school aged children also has a negative effect on employment probability. For men, being an NESB migrant, having a non-employed partner and being aged 20 to 29 all appear to reduce the probability of employment. Being from ATSI descent increases the probability, but as in the change in SEIFA equation, this is likely to be due to the very small number of individuals in the sample who are from ATSI descent.

Table 28: Bivariate probit-ordered probit model for change in SEIFA and probability of re-employment – Males (322 observations on 278 non-employed movers)

Characteristics at time 1	Probit model: Re-employment		Ordered probit model: Change in SEIFA	
	Coef.	Std. Err.	Coef.	Std. Err.
Homeowner	-0.214	0.165	-0.138	0.141
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	-0.390*	0.222	-0.484**	0.213
30 to 39	-0.302	0.274	-0.345	0.241
40 to 49	-0.044	0.259	-0.129	0.250
50 to 59	-0.453	0.276	-0.235	0.275
<i>Partner's employment type (reference: No partner)</i>				
Not employed	-0.497*	0.278	-0.113	0.198
Unskilled job	0.245	0.394	0.079	0.302
Skilled job	-0.134	0.331	0.225	0.289
<i>Has a child aged:</i>				
0 to 4 years	0.335	0.282	0.113	0.219
5 to 14 years	0.018	0.245	0.029	0.186
15 to 24 years	0.186	0.294	0.033	0.296
<i>Education level (reference: Less than Year 12)</i>				
Year 12	0.377	0.235	-0.041	0.191
Vocational qualification	-0.032	0.173	0.040	0.156
Tertiary qualification	0.002	0.236	0.042	0.212
<i>Ethnicity (reference: Australian-born or ESB migrant)</i>				
NESB migrant	-0.704*	0.404	0.087	0.202
ATSI descent	0.699*	0.381	0.930**	0.381
<i>Type of income support received (reference: No income support received)</i>				
Unemployment-related payment	-1.019***	0.202	-0.141	0.185
Other payments	-0.603***	0.185	0.250	0.172
Non-work duration	-0.919***	0.173		
<i>Characteristics of new location at postcode level</i>				
Distance of move (in kms) (reference: Less than 20)				
20 to 50	-0.326*	0.185		
50 to 200	-0.140	0.125		
Further than 200	-0.107	0.171		
Population size/100,000	0.002	0.036		
Proportion that use public transport to work	0.602	0.835		
Proportion from NESB	-0.732	0.534		
Proportion from NESB × being NESB migrant	2.974***	1.153		
Number of skilled vacancies	0.013	0.054		
Number of unskilled vacancies	0.005	0.025		
Remoteness measure (ARIA) (reference: Highly accessible)				
Accessible	-0.242	0.169		
Moderately accessible	-0.294	0.194		
Remote or very remote	0.551**	0.245		
Moved to area with same SEIFA level	-1.437***	0.147		
Moved to area with higher SEIFA level	-2.871***	0.186		
Cut-off point in probit	-2.700***	0.374		
1 st cut-off point in ordered probit			-1.050***	0.202
2 nd cut-off point in ordered probit			0.682***	0.194
Correlation (rho)	1.000	0.000		

Notes: * ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. Re-employment is measured at time 2. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

Table 29: Bivariate probit-ordered probit model for change in SEIFA and probability of re-employment – Females (789 observations on 606 non-employed movers)

Characteristics at time 1	Probit model: Re-employment		Ordered probit model: Change in SEIFA	
	Coef.	Std. Err.	Coef.	Std. Err.
Homeowner	-0.105	0.155	-0.079	0.101
<i>Age in years (reference: 15 to 19)</i>				
20 to 29	-0.019	0.214	0.040	0.159
30 to 39	0.081	0.230	-0.012	0.167
40 to 49	-0.294	0.260	0.021	0.181
50 to 59	-0.297	0.257	0.014	0.182
<i>Partner's employment type (reference: No partner)</i>				
Not employed	-0.210	0.245	-0.174	0.125
Unskilled job	-0.234	0.225	0.005	0.123
Skilled job	-0.170	0.166	0.159	0.122
<i>Has a child aged:</i>				
0 to 4 years	-0.385*	0.208	-0.032	0.095
5 to 14 years	0.075	0.142	-0.167*	0.092
15 to 24 years	0.257	0.190	-0.005	0.128
<i>Education level (reference: Less than Year 12)</i>				
Year 12	-0.096	0.178	0.180	0.122
Vocational qualification	0.187	0.190	0.138	0.090
Tertiary qualification	0.068	0.229	0.210*	0.123
<i>Ethnicity (reference: Australian-born or ESB migrant)</i>				
NESB migrant	-0.485	0.316	0.291*	0.149
ATSI descent	-0.105	0.185	0.027	0.139
<i>Type of income support received (reference: No income support received)</i>				
Unemployment-related payment	-0.574**	0.227	0.079	0.104
Other payments	-0.428*	0.234	0.050	0.168
Non-work duration	-2.391**	0.982		
<i>Characteristics of new location at postcode level</i>				
Distance of move (in kms) (reference: Less than 20)				
20 to 50	0.133	0.164		
50 to 200	-0.166	0.153		
Further than 200	0.114	0.155		
Population size/100,000	0.015	0.029		
Proportion that use public transport to work	0.159	0.830		
Proportion from NESB	-1.106	0.791		
Proportion from NESB × being NESB migrant	-0.037	1.161		
Number of skilled vacancies	0.084	0.059		
Number of unskilled vacancies	-0.029	0.027		
Remoteness measure (ARIA) (reference: Highly accessible)				
Accessible	-0.241	0.152		
Moderately accessible	-0.114	0.186		
Remote or very remote	-0.483	0.470		
Moved to area with same SEIFA level	1.034*	0.617		
Moved to area with higher SEIFA level	2.300**	1.111		
Cut-off point in probit	-1.032	1.414		
1 st cut-off point in ordered probit			-0.698***	0.179
2 nd cut-off point in ordered probit			1.001***	0.186
Correlation (rho)	-0.697	0.427		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is at the start of the period in which the decision to move is measured; time 2 is at the end of this period. Re-employment is measured at time 2. For definitions of abbreviations used refer to the List of Abbreviations on page 4. 'Skilled job' defined as an occupation in the top 5 categories of ASCO (at 1-digit level), whilst an occupation in the bottom 4 categories is considered an 'Unskilled job'.

A few of the area characteristics are significant in the model for males. The probability appears higher in remote to very remote regions in Australia, which may again be due to the small number of individuals living in those areas or perhaps because individuals who move there only do so because they already have a job there (rather than moving there to find a job). Male NESB migrants who live in an area with a higher proportion of NESB migrants are more likely to find employment. This appears to support the importance of ethnic networks in providing access to employment opportunities (Bayer *et al.*, 2006). And, finally, moving to an area with the same or higher SEIFA level compared to that in the individual's original location has a positive effect on finding employment for women, but a negative effect for men. The correlation in the error terms is negative for women and positive for men. The estimate for men is at the upper bound of one.

6.3 Decision to move – Increase in earnings (RED)

To conduct this analysis using RED data we select a subsample, whereby observations for three consecutive years are required. For these individuals, we examine whether they moved during the second year and whether their earned income has increased in the third year compared to the first year. As mentioned in Section 4.3, the RED does not record what happens to individuals who leave income support and therefore we cannot use employment as an outcome variable. However, we investigate the sensitivity of the analysis to using leaving income support together with increased earnings as the dependent variable.

Some individuals remain on income support for many years and so they appear in the analysis more than once (once for each consecutive three-year period in which they are on income support). Since repeated observations on the same individual are, of course, correlated we use the “cluster” command in STATA to correct the estimated standard errors for the parameters. The advantage of RED being a much larger data set which focuses on income support recipients becomes quite apparent in this subsection, as it allows us to estimate effects more precisely than was possible in Section 6.1.

The results are presented in Tables 30 and 31 for men and women separately. In accordance with expectations, the number of women in the sample is much larger than the number of men, due to the larger number of working-age women on income support. A first observation is that the estimated parameters have mostly the same sign and similar significance for men and women. There are a few exceptions, such as having a partner which makes increased earnings less likely for women and more likely for men. Further, the effect on the probability of increased earnings of a newborn child is negative for women in accordance with

expectations, and has no effect for men. Also, the SEIFA level of an area does not affect the chance of women experiencing an increase in earnings, but it has a negative effect for men.

Table 30: Bivariate probit model for decision to move and increase in earnings – Males (418,706 observations on 127,298 men)

	Probit model: Increase in earnings ^a		Probit model: Decision to move ^b	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	0.348***	0.015	0.390***	0.013
20 to 29	0.256***	0.009	0.276***	0.009
30 to 39	0.126***	0.009	0.149***	0.009
50 to 59	-0.215***	0.010	-0.098***	0.010
60 or over	-0.607***	0.012	-0.130***	0.012
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	-0.473***	0.013	0.125***	0.012
ESB migrant	0.042***	0.012	0.097***	0.012
NESB migrant	-0.107***	0.009	-0.055***	0.009
Partnered	0.129***	0.010	-0.047***	0.009
<i>Has a child aged:</i>				
0 to 4 years	-0.209***	0.027	0.118***	0.024
5 to 12 years	-0.046**	0.020	0.026	0.020
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	-0.012	0.010	0.719***	0.009
Private renter	0.097***	0.009	0.895***	0.007
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	0.542***	0.013	0.284***	0.013
DSP	-0.261***	0.014	0.038***	0.013
PPS no work requirement	0.398***	0.024	-0.013	0.024
PPS and work requirement	0.576***	0.027	-0.087**	0.036
PPP no work requirement	0.314***	0.029	-0.048	0.031
PPP and work requirement	0.406***	0.042	-0.121*	0.068
Lives in a capital city	-0.039***	0.006	0.122***	0.006
<i>Major life events</i>				
Newborn child	0.043	0.030	0.078***	0.030
New children aged 5 to 12 years	0.060***	0.022	0.148***	0.025
No more children aged 5 to 12 years	0.069***	0.018	0.073***	0.023
Newly single	0.002	0.019	0.376***	0.021
Newly partnered	0.122***	0.018	0.229***	0.022
Change in type of income support received	0.050***	0.009	0.107***	0.011
<i>Differences in characteristics of location at postcode level</i>				
Unemployment rate	-0.033***	0.002		
Number of unskilled vacancies/1000	0.015***	0.001		
Number of skilled vacancies/1000	-0.015***	0.003		
Average SEIFA score/100	-0.034***	0.013		
Moved postcode	-0.169***	0.031		
Constant	-0.957***	0.015	-1.859***	0.016
Correlation (rho)	0.125***	0.018		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

^a values from third year in the three-year sequence, or are a change from the first to the third year.

^b values from second year in the three-year sequence, or are a change from the first to the second year.

For definitions of abbreviations used refer to the List of Abbreviations on page 4.

Table 31: Bivariate probit model for decision to move and increase in earnings – Females (558,808 observations on 159,036 women)

	Probit model: Increase in earnings ^a		Probit model: Decision to move ^b	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	0.111***	0.014	0.419***	0.012
20 to 29	0.127***	0.009	0.260***	0.009
30 to 39	0.069***	0.007	0.125***	0.008
50 to 59	-0.241***	0.009	-0.032***	0.009
60 or over	-0.667***	0.014	-0.106***	0.014
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	-0.479***	0.012	0.075***	0.011
ESB migrant	0.032***	0.010	0.076***	0.010
NESB migrant	-0.270***	0.008	-0.126***	0.008
Partnered	-0.071***	0.009	-0.059***	0.008
<i>Has a child aged:</i>				
0 to 4 years	-0.401***	0.008	0.068***	0.008
5 to 12 years	-0.067***	0.007	-0.087***	0.007
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	-0.024***	0.009	0.817***	0.009
Private renter	0.062***	0.007	0.934***	0.006
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	0.524***	0.011	0.268***	0.010
DSP	-0.355***	0.011	-0.018*	0.010
PPS no work requirement	0.680***	0.012	0.044***	0.012
PPS and work requirement	0.690***	0.013	-0.021	0.015
PPP no work requirement	0.316***	0.014	-0.014	0.013
PPP and work requirement	0.529***	0.018	-0.046*	0.026
Lives in a capital city	-0.036***	0.005	0.128***	0.005
<i>Major life events</i>				
Newborn child	-0.291***	0.009	0.158***	0.009
New children aged 5 to 12 years	-0.095***	0.008	0.132***	0.009
No more children aged 5 to 12 years	0.017**	0.007	0.022**	0.009
Newly single	-0.007	0.013	0.181***	0.015
Newly partnered	0.072***	0.014	0.127***	0.016
Change in type of income support received	-0.013*	0.007	0.113***	0.008
<i>Differences in characteristics of location at postcode level</i>				
Unemployment rate	-0.028***	0.002		
Number of unskilled vacancies/1000	0.021***	0.001		
Number of skilled vacancies/1000	-0.029***	0.003		
Average SEIFA score/100	-0.005	0.012		
Moved postcode	-0.050**	0.025		
Constant	-0.766***	0.012	-1.844***	0.012
Correlation (rho)	0.019	0.014		

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

^a values from third year in the three-year sequence, or are a change from the first to the third year.

^b values from second year in the three-year sequence, or are a change from the first to the second year.

For definitions of abbreviations used refer to the List of Abbreviations on page 4.

The effects of individual characteristics on the decision to move are similar to those observed in previous sections. That is, older individuals, partnered individuals, NESB migrants, women with school-aged children, women on DSP, and those on parenting payments with a work

requirement are less likely to move. On the other hand, younger individuals, ESB migrants, individuals from ATSI descent, those with pre-school children, homeowners and private renters (relative to those living in Public Housing), those on unemployment-related benefits, male DSP recipients, and those living in a capital city are all more likely to move. In addition, a few life events such as having a newborn child, a child in the age range 5 to 12 years, no more children in the 5 to 12 year age range, becoming single, entering a new relationship, and a change in benefit type all have a positive effect on the probability of moving.

The increased earnings equations show effects that are similar to some of the re-employment effects found in Section 6.1. Young income support recipients are more likely to experience an increase in earnings than older individuals. Individuals from an ATSI background are much less likely to experience an increase in earnings, and to a lesser extent NESB migrants also experience a lower likelihood of increasing earnings. As previously mentioned, partnered women are less likely to have an earnings increase and partnered men are more likely to experience an increase in earnings. This may have something to do with being the primary or secondary wage earner within a family. Young children have a negative effect on the probability of increased earnings, and while the effect appears bigger for women it is also substantial for men. Being a private renter has a small positive effect on the probability of increased earnings and being a female homeowner has a small negative effect on the probability of increased earnings.

As expected, given the job search requirements, compared to receiving other income support, receiving an unemployment-related benefit increases the probability of increased earnings. A similar effect is observed for PPP and PPS, where the effects for the benefits with a work requirement are somewhat larger than for the benefits without such a requirement. It should be noted that relatively few men receive a parenting-related payment, so the estimates on PPP and PPS for the male equation are based on small numbers of observations. Unexpectedly, we find that living in a capital city reduces the probability of experiencing increased earnings.

A number of life events and changes in area characteristics are also shown to have an effect on the probability of increased earnings. The effect of changes in having children in different age groups is different for men and women. Newborn children only have a negative effect for women, who are usually the primary carers in the income unit. Similarly, having children aged 5 to 12 where there were none before affects women negatively and men positively. Having no more children aged 5 to 12 affects both men and women positively. Men and women who start a new relationship are more likely to have an increase in earnings. Job

opportunities in an area, as reflected by the unemployment rate and the number of job vacancies, are found to be important. A higher unemployment rate decreases the probability of increased earnings, while a higher number of unskilled job vacancies increases this probability. It is interesting to note that the number of skilled job vacancies decreases the chance of increasing earnings. The negative effect of the average SEIFA score may also, to some extent, be due to the lower level of (unskilled) job vacancies in higher SEIFA areas (which we observed in the descriptive statistics by SEIFA level in Section 2).

The direct effect of moving from one postcode to another on the probability of increasing earnings is negative for men and women. This negative direct effect of moving could at least be partly compensated if the move is to an area with substantially lower unemployment rates or larger numbers of job vacancies. For women, the error terms in the two equations appear uncorrelated, but for men the correlation is significantly positive which indicates that the unobserved characteristics of those who move are positively correlated with the unobserved characteristics of those who experience an increase in earnings.

In the analyses in this subsection we only considered individuals who remained on income support after their move. This means that those who became employed and no longer needed income support were excluded from the analysis. To obtain an insight into the effect this has on the estimated parameters, we also estimated a model where the outcome in the first equation was the increase in earnings or exit from income support (the detailed results are not included in this report, only a brief discussion follows). Unfortunately, once individuals exit income support they no longer appear in the RED data and we have no information about them. As a result, we are left with a reduced set of characteristics to include in estimation. However, for some of these we can make assumptions regarding their values. For men, the estimated effects of the remaining characteristics on the probability of moving and increasing earnings are quite similar to what we previously found, even though roughly 100,000 additional observations and 40,000 additional men are included in the analysis. This indicates that the characteristics of men who leave income support coincide with the characteristics of men who experience an increase in earnings.

For women, we observe more differences after the addition of around 100,000 extra observations on 34,000 women. Most importantly, the effect of moving from one postcode to another is now positive and the correlation between the error terms in the two equations is negative. This indicates that there is a difference between women with increased earnings and women who leave income support. Women are perhaps more likely to exit income support

due to non-employment related factors, such as the increased earnings of a partner or through a new relationship. Therefore, these women may not be similar to those who experience increased earnings. Some support for this explanation is that the effect for women on PPP without a work requirement is now much closer to the effect for women on PPP with a work requirement.

6.4 Movers: Change in SEIFA – Increase in earnings (RED)

For the analyses conducted in this subsection, we focus on those individuals who moved from the first to the second year. Once again, observations covering three consecutive years are required. For these individuals, we consider whether they moved up or down in SEIFA category (that is they can move between three categories, bottom two deciles, middle six deciles and top two deciles) as a result of the move in the second year, and we consider whether their earned income has increased in the third year compared to the first year. Some individuals move on numerous occasions during their time on income support, and so they appear in the analysis more than once (once for each consecutive three-year period in which they are on income support and in which they moved from one postcode to another). Since repeated observations on the same individual are, of course, correlated we again use the “cluster” command in STATA to correct the estimated standard errors on the parameters.

Tables 32 and 33 present the results. Naturally, the samples used for this analysis are much smaller than those on which Tables 30 and 31 are based. Nevertheless, the direction of the estimated effects in the increased earnings equations are mostly the same in these two sets of tables. We first discuss the ordered probit explaining the change in SEIFA level resulting from the move. Relatively few effects are significant in the change in SEIFA level equations.

The youngest age group is most likely to move up in SEIFA, possibly because they still live with their parents and move with their parents. Men from ATSI descent and NESB migrants also appear more likely to move up in SEIFA. The presence of pre-school children reduces the probability of moving up in SEIFA level, and the presence of school-age children increases the probability of increased SEIFA levels for women. Finally, private renters are more likely to move up in SEIFA. However, all these effects appear relatively small.

Table 32: Bivariate probit-ordered probit model for increase in earnings and change in SEIFA level – Males (75,611 observations on 45,872 men who moved)

Characteristics at time 3	Probit model: Increase in earnings		Ordered probit model: Change in SEIFA category	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	0.272***	0.025	0.032*	0.017
20 to 29	0.195***	0.016	0.014	0.010
30 to 39	0.092***	0.017	0.002	0.010
50 to 59	-0.187***	0.022	0.000	0.013
60 or over	-0.598***	0.033	-0.015	0.016
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	-0.406***	0.020	0.022**	0.010
ESB migrant	0.020	0.021	0.001	0.012
NESB migrant	-0.069**	0.034	0.022**	0.010
Partnered	0.171***	0.022	-0.007	0.012
<i>Has a child aged:</i>				
0 to 4 years	-0.188***	0.055	-0.052**	0.025
5 to 12 years	-0.095**	0.044	0.005	0.023
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	0.055***	0.020	0.023	0.014
Private renter	0.177***	0.017	0.044***	0.012
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	0.377***	0.029	-0.018	0.019
DSP	-0.360***	0.030	0.002	0.019
PPS no work requirement	0.215***	0.049	0.021	0.034
PPS and work requirement	0.446***	0.066	-0.043	0.046
PPP no work requirement	0.154**	0.062	0.057	0.046
PPP and work requirement	0.475***	0.121	0.059	0.095
No. of days on income support from time 1 to time 3			-0.005	0.006
Lives in a capital city	-0.026*	0.014		
<i>Major life events (between time 1 and time 3)</i>				
Newborn child	0.037	0.058		
New children aged 5 to 12 years	0.090*	0.051		
No more children aged 5 to 12 years	-0.003	0.037		
Newly single	-0.011	0.030		
Newly partnered	0.111***	0.032		
Change in type of income support received	0.022	0.018		
<i>Characteristics of new location at postcode level</i>				
Proportion from NESB	-0.288***	0.057		
Proportion from NESB x being NESB migrant	-0.349***	0.104		
<i>Differences in characteristics of location at postcode level</i>				
Unemployment rate	-0.030***	0.003		
Number of unskilled vacancies/1000	0.012***	0.002		
Number of skilled vacancies/1000	-0.019***	0.004		
Moved into capital city	0.027	0.019		
Moved out of capital city	-0.016	0.019		
Moved up in SEIFA decile	-0.028*	0.016		
Moved down in SEIFA decile	-0.021	0.016		
Cut-off point in probit/ 1 st cut-off in ordered probit	0.795***	0.037	-0.690***	0.027
Correlation (rho)/ 2 nd cut-off point in ordered probit	0.002	0.008	0.750***	0.027

Notes: *, ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is the first year in the three-year sequence, whilst time 3 is the third year. Moves are identified between second and third years; increase in earnings identified by comparing earnings in third year to first year. For definitions of abbreviations used refer to the List of Abbreviations on page 4.

Table 33: Bivariate probit-ordered probit model for increase in earnings and change in SEIFA level – Females (93,497 observations on 58,160 women who moved)

Characteristics at time 3	Probit model: Increase in earnings		Ordered probit model: Change in SEIFA category	
	Coef.	Std. Err.	Coef.	Std. Err.
<i>Age in years (reference: 40 to 49)</i>				
15 to 19	0.143***	0.023	0.041***	0.016
20 to 29	0.157***	0.016	0.012	0.010
30 to 39	0.079***	0.016	0.008	0.010
50 to 59	-0.173***	0.021	0.006	0.013
60 or over	-0.694***	0.040	0.013	0.020
<i>Ethnicity (reference: Australian-born)</i>				
ATSI descent	-0.439***	0.020	0.014	0.010
ESB migrant	0.052***	0.019	-0.011	0.011
NESB migrant	-0.007	0.032	0.038***	0.009
Partnered	-0.053**	0.021	0.012	0.012
<i>Has a child aged:</i>				
0 to 4 years	-0.389***	0.017	-0.020*	0.010
5 to 12 years	-0.078***	0.016	0.024***	0.009
<i>Type of tenancy (reference: Government renter or Other housing)</i>				
Homeowner	0.018	0.018	0.020	0.013
Private renter	0.138***	0.013	0.042***	0.010
<i>Type of income support received (reference: Other payments)</i>				
Unemployment-related payment	0.431***	0.024	0.015	0.015
DSP	-0.324***	0.025	-0.012	0.014
PPS no work requirement	0.580***	0.026	0.008	0.017
PPS and work requirement	0.627***	0.031	-0.014	0.020
PPP no work requirement	0.273***	0.032	0.003	0.020
PPP and work requirement	0.385***	0.053	0.035	0.037
No. of days on income support from time 1 to time 3			0.007	0.006
Lives in a capital city	-0.052***	0.013		
<i>Major life events (between time 1 and time 3)</i>				
Newborn child	-0.340***	0.017		
New children aged 5 to 12 years	-0.096***	0.017		
No more children aged 5 to 12 years	-0.028	0.017		
Newly single	0.038*	0.022		
Newly partnered	0.072***	0.027		
Change in type of income support received	-0.051***	0.013		
<i>Characteristics of new location at postcode level</i>				
Proportion from NESB	-0.414***	0.054		
Proportion from NESB x being NESB migrant	-0.495***	0.102		
<i>Differences in characteristics of location at postcode level</i>				
Unemployment rate	-0.020***	0.003		
Number of unskilled vacancies/1000	0.013***	0.002		
Number of skilled vacancies/1000	-0.022***	0.004		
Moved into capital city	-0.001	0.018		
Moved out of capital city	-0.003	0.018		
Moved up in SEIFA decile	0.046***	0.014		
Moved down in SEIFA decile	0.052***	0.014		
Cut-off point in probit/ 1 st cut-off in ordered probit	0.797***	0.031	-0.666***	0.024
Correlation (rho)/ 2 nd cut-off point in ordered probit	-0.003	0.007	0.831***	0.024

Note: * ** and *** indicate statistical significance at the 10%, 5% and 1% levels respectively.

Time 1 is the first year in the three-year sequence, whilst time 3 is the third year. Moves are identified between second and third years; increase in earnings identified by comparing earnings in third year to first year. For definitions of abbreviations used refer to the List of Abbreviations on page 4.

As in earlier analyses, younger individuals are more likely to have an increase in earnings than older individuals, and this probability decreases steadily with age for men and women. Being from an ATSI background or being an NESB migrant decreases the probability of increasing earnings, with the former effect being much larger and the latter effect only applying to men. Female ESB migrants are more likely to experience increased earnings. As previously found, men who have a partner are more likely and women who have a partner are less likely to have increased earnings. Children, in particular pre-school children, reduce the probability of increasing earnings for men and women, and although the effect appears larger for women it is still substantial for men as well. Male homeowners and male and female private renters have higher occurrences of increased earnings. Those on unemployment-related income support or on parenting payments are more likely to have increased earnings. The effects for parenting payment recipients are larger when there is a work requirement. Again note that relatively few men receive a parenting-related payment, so the estimates of the effect of PPS and PPP for men are based on small numbers of observations. Capital city residents appear somewhat less likely to have an increase in earnings than individuals living elsewhere.

For women, additional children have the expected negative effect on the possibility of increasing earnings. Women who are newly single, and men and women who entered a new relationship are more likely to increase their earnings. A change in welfare benefit type decreases the probability of increased earnings for women.

For men and women, living in a location with a larger proportion of NESB migrants reduces the probability of increased earnings. This negative effect persists and is stronger for NESB migrants (males and females) who are currently living in a region with a larger proportion of NESB migrants. This is opposite to what is found in Section 6.2 for male NESB migrants in HILDA. A recent study by Cutler *et al.* (2008) reconciles this type of conflicting findings in the literature. They find that the impact of living in an ethnic enclave differs between groups of different human capital; that is, groups with low education levels appear to suffer negative consequences associated with living in an enclave community. Compared to a more general population, as represented by HILDA, income support recipients in RED are more likely to belong to the low education group.

Finally, the probability of increased earnings remains sensitive to the local economic circumstances as reflected in the unemployment rate and number of job vacancies. A higher unemployment rate decreases this probability, whereas a higher number of unskilled job

vacancies increases this probability. As before, the number of skilled job vacancies decreases the likelihood of an increase in earnings. The change in SEIFA level (from one decile to another) has a negative effect on the earnings outcomes of men who move up, and both a move up or down has a positive effect on the outcomes of women. This may be an indication of the distance of the move, where a larger change in SEIFA level is more likely when the individual moves over a larger distance. In neither of the two models is there any evidence of correlation between the two sets of error terms. This means there is no evidence that a change in SEIFA level affects directly or indirectly the earnings opportunities of income support recipients.

7. General Discussion

A large number of results have been reported in Sections 5 and 6. In this section, we aim to synthesise these results and provide a concise overview of the important outcomes from the analyses in this report.

With regard to the factors that influence mobility, a number of individual characteristics have appeared to be important and have similar effects within both the general population and income support recipients. Age is found to be an important factor for men, women, singles, couples, income support recipients and the general population. In all cases, mobility is shown to decrease with increasing age. Similarly, the age of children is important, whereby families with pre-school aged children are more likely to move than families with school-aged children. Homeowners were found to be less likely to move than private renters. Given the large fixed cost of moving when owning a house, such as the cost of selling the old home and buying a new home, this finding is not surprising. In using RED data we are able to assess the effect of Public Housing on mobility, and found that income support recipients who live in Public Housing are much less likely to move than either homeowners or private renters. This is possibly due to the difficulty of getting into Public Housing.

It is found in both HILDA and RED data that NESB migrants appear less likely to move than other groups. This may be at least partly due to the fact that if they live in an area with a large proportion of NESB migrants they are less likely to move. ESB migrants are slightly more likely to move than Australian-born individuals. The RED data also show that income support recipients from an ATSI background are substantially more likely to move. These effects are mostly insignificant in analyses using HILDA data, which is likely to be due to the much smaller sample from this group.

A number of life events also appear to influence the decision to move. Not surprisingly, recent changes in income unit composition, such as a newborn baby or becoming single or partnered, increase the probability of moving. Changes in financial situation, a promotion at work or a change in job all increase mobility, whereas the loss of a job decreases mobility.

Finally for the consideration of mobility, there are differences for individuals depending on the type of income support that they receive. Men and women on unemployment-related benefits are clearly more likely to move. Men on DSP and women on PPS without a work requirement also appear slightly more likely to move. The other Parenting Payment groups

appear somewhat less likely to move. Meanwhile, a recent change in the type of income support that is received makes a move more likely.

From examining the SEIFA levels in the original location of an individual or couple, a number of relationships between characteristics and SEIFA levels are found. Homeowners tend to be found in higher SEIFA areas, possibly reflecting higher levels of homeownership in high SEIFA areas. Amongst income support recipients, private renters are slightly more likely to live in areas with higher SEIFA levels than renters in Public Housing. Individuals with higher levels of education are also more likely to be found in high SEIFA areas, which is likely linked to income levels, as is the higher probability of high-skilled workers and the lower probability of benefit recipients living in high SEIFA areas. NESB migrants in the general population are more likely to live in high SEIFA areas than the Australian-born and ESB background migrants, but NESB migrants on income support are much less likely than Australian-born individuals to live in high SEIFA areas. Individuals from ATSI descent are less likely to live in high SEIFA areas, and this is one of the strongest effects we find for the SEIFA level.

In this context we find that age effects are not very strong, although there appears to be a tendency for older people to be more likely to live in a high SEIFA area, except for the single individuals in HILDA. The latter exception is likely to be caused by young individuals still living with their parents, which results in the youngest age group being the most likely to live in a high SEIFA area.

We have also explored some of the area characteristics in relation to the SEIFA level. Public transport appears to be of better quality in high SEIFA areas as reflected by the proportion of the population that uses public transport to travel to work. High SEIFA areas are also associated with a larger number of skilled job vacancies and a smaller number of unskilled job vacancies. Capital cities are more likely to contain high SEIFA areas and more remote areas are less likely to contain high SEIFA locations.

Unfortunately, the change in SEIFA level following a move is not well explained by the information that we have available on individuals and their circumstances. We find very few characteristics which are significant (even in the large sample using RED data) and there does not appear to be a particular pattern in the significant effects. In RED data, young individuals (15 to 19 years of age), private renters and NESB migrants appear slightly more likely to move up in SEIFA level.

As in Black *et al.* (2008), economic circumstances do not appear relevant in the choice of a location in which to live, instead the key factor remains whether a move is required for the specific choice of location. The probability of a location being chosen also reduces with the distance of the move. We find that income support recipients and the general population are affected differently by the level of SEIFA in their choice of location. Income support recipients are more likely to choose low SEIFA areas, whilst the general population are more likely to choose high SEIFA areas.

Despite the lack of importance of local economic circumstances in the choice of location, from the probability of re-employment and the probability of increased earnings equations it is clear that the economic circumstances of an area, as reflected by the local unemployment rate and the number of unskilled job vacancies, are important for labour market outcomes. The effects are as expected: probabilities of re-employment and increased earnings are lower when unemployment is higher and when the number of unskilled job vacancies is lower. It is interesting to note that the number of skilled job vacancies has either no effect or reduces the probability of employment or increased earnings. This is likely due to the samples being analysed, which include those who are not employed in the general population in HILDA and income support recipients in RED.

Other factors that affect the probability of re-employment and the probability of increased earnings are the usual human capital related factors. As is usually found, older individuals are less likely to be re-employed or experience an increase in earnings while receiving income support. For men in the general population, the presence of young children improves the re-employment probability while for women in general and for men on income support it decreases this, as does the presence of a partner for women (particularly one in a skilled job). The presence of a partner is less important for men, but if anything it increases his probability of employment or increased earnings. Having a non-employed partner, however, decreases his probability of employment. A higher level of education increases (particularly for women) the probabilities of employment, which possibly indicates that lower-educated women may choose to stay out of the labour force and look after the home and/or children. As is clear from RED, income support recipients from ATSI descent are much less likely to experience increased earnings. A similar, but much smaller, effect is evident for NESB migrants. Individuals receiving income support (particularly unemployment-related benefits) and those who have been out of employment for a longer period are much less likely to be employed again. Within the group of income support recipients, those on unemployment-related

payments and on parenting payments (particularly the payments with a work requirement) are more likely to experience an increase in earnings over time.

In the analyses, a number of correlations between original SEIFA level, change in SEIFA level, spatial mobility and re-employment or increased earnings were found. First, we consider the decision to move and the SEIFA level in the original location. For singles in HILDA and for male and female income support recipients a positive correlation was found between unobserved characteristics affecting the decision to move and the original SEIFA level. This indicates that similar characteristics affect the decision to move and the choice for a high SEIFA area, which implies those living in high SEIFA areas are more mobile. We find no correlation for couple families. The unobserved factors in the decision to move and the change in SEIFA level for singles in the general population and male and female income support recipients, however, are not correlated, but there is a significant positive correlation for couples in the general population.

Second, re-employment or increased earnings and the decision to move are considered. For men, there is no correlation evident nor is there a direct effect of moving on the probability of re-employment. For women, we find a positive correlation which indicates that women who move are also more likely to find employment, but the direct effect of moving appears to be negative. A similar effect is found for male income support recipients, whereas for women the correlation between the unobserved factors in the two equations is insignificant, while the direct effect of moving on the probability of increased earnings is negative. For the movers, there is no significant correlation between the unobserved factors affecting the change in SEIFA level and the probability of re-employment or increased earnings. In addition, there is no pattern in the direct effect of a change in SEIFA level on this probability. That is, there is no evidence of whether increased or decreased SEIFA levels improve labour market outcomes.

There are a number of ways in which this study could be extended or in which some aspects could be investigated more deeply. An obvious issue of interest is the effect of the current Global Financial Crisis. Using RED data this could be examined next year, but a broader investigation using HILDA data would probably need to wait until at least 2011 (for the release of Wave 9 data).

From the analyses in this report it is clear that the population of Australians from Indigenous descent (ATSI) is very disadvantaged and that a deeper investigation into the driving factors of disadvantage and the factors that are associated with better outcomes within this group is

warranted. However, due to the relatively small size of this population, this group is poorly represented by a limited number of individuals in most data sets. In RED, a larger number can be analysed, but then very few explanatory variables are available, so it would be difficult to learn what factors are most important in escaping disadvantage. To make progress in the area of Indigenous disadvantage, we would need to explore what is possible, what alternative data sources could be used and build on the expertise of others. Another group who experience difficulties are those who have low educational attainment. This issue could be explored using HILDA data, but not with the current RED data.

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Appendix Tables

Appendix Table A.1: Definition of aggregate categories of reasons for moving (HILDA)

Aggregate categories	Includes <i>the listed reasons</i> :
Lifestyle	To get place of my own To live in better neighbourhood Amenities Lifestyle Neighbourhood reasons
Family	To get married Closer to friends and family Marital breakdown Whole family moved Personal / family
Enforced	Property no longer available Evicted Temporary relocation Government housing (no choice)
Job related	To start job with new employer Nearer place of work Work transfer Start own business Relocate own business Work reasons
Cheaper house	To get smaller cheaper place
More expensive house	To get larger, better place
Look for work	Look for work
Health	Health
Other	Close to place of study Moved to Australia Returned from overseas Other

Appendix Table A.2: Moving distance for singles and couples by age (HILDA) (%)

	Distance (km)			
	Less than 20	20 to 50	50 to 200	Further than 200
<i>Singles</i>				
All	0.71	0.07	0.08	0.13
Age 15-24 years	0.68	0.05	0.11	0.15
Age 25-29 years	0.72	0.12	0.03	0.13
Age 30 years or over	0.74	0.07	0.07	0.11
<i>Couples</i>				
All	0.66	0.09	0.07	0.18
Age 15-24 years	0.77	0.15	0.00	0.08
Age 25-29 years	0.70	0.08	0.05	0.17
Age 30 years or over	0.64	0.08	0.08	0.20

Appendix Table A.3: ABS Statistical Regions

State / Territory	ABS Statistical Region number	ABS Statistical Region name
New South Wales (N.S.W)	1105	Inner Sydney <i>and</i> Inner Western Sydney
	1108	Eastern Suburbs
	1112	St George-Sutherland
	1116	Canterbury-Bankstown
	1122	Fairfield-Liverpool <i>and</i> Outer South Western Sydney
	1132	Central Western Sydney
	1136	North Western Sydney
	1144	Lower Northern Sydney
	1148	Central Northern Sydney
	1152	Northern Beaches
	1156	Gosford-Wyong
	1964	Hunter
	1970	Illawarra <i>and</i> South Eastern
	1978	Richmond-Tweed <i>and</i> Mid-North Coast
	1990	Northern <i>and</i> Far West-North Western <i>and</i> Central West
	1996	Murray-Murrumbidgee
	Victoria (VIC)	2102
2106		North Western Melbourne
2108		Inner Melbourne
2112		North Eastern Melbourne
2116		Inner Eastern Melbourne
2120		Southern Melbourne
2124		Outer Eastern Melbourne
2126		South Eastern Melbourne
2128		Mornington Peninsula
2964		Barwon-Western District
2968		Central Highlands-Wimmera
2972		Loddon-Mallee
2974		Goulburn-Ovens-Murray
2976	All Gippsland	
Queensland (QLD)	3104	Brisbane City Inner Ring
	3108	Brisbane City Outer Ring
	3112	South and East BSD Balance
	3116	North and West BSD Balance
	3964	South and East Moreton
	3968	North and West Moreton
	3972	Wide Bay-Burnett
	3976	Darling Downs-South West
	3980	Mackay-Fitzroy-Central West
	3984	Northern-North West
	3988	Far North
South Australia (S.A)	4104	Northern Adelaide
	4108	Western Adelaide
	4112	Eastern Adelaide
	4116	Southern Adelaide
	4964	Northern and Western SA
	4968	Southern and Eastern SA

Appendix Table A.3: Continued

State / Territory	ABS Statistical Region number	ABS Statistical Region name
Western Australia (W.A)	5104	Central Metropolitan (Perth)
	5108	East Metropolitan (Perth)
	5112	North Metropolitan (Perth)
	5116	South West Metropolitan (Perth)
	5120	South East Metropolitan (Perth)
	5964	Lower Western WA
	5968	Remainder-Balance WA
Tasmania (TAS)	6104	Tasmania
Northern Territory (N.T)	7104	Northern Territory
Australian Capital Territory (A.C.T)	8104	Australian Capital Territory
Other Territories	9104	Other Territories ^a

Source: Australian Standard Geographical Classification (ASGC), ABS Cat. No. 1216.0, July 2005

Note a: no one in the HILDA sample was from this region.