

Socio-spatial impacts on labour market transitional outcomes

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Abstract

This paper will examine how location affects both the duration of unemployment and employment transitional outcomes in Australia with a particular focus on those living in regional urban localities outside major cities.

The study uses an unbalanced and unweighted panel from HILDA waves 1 - 8 and includes observations from 17,258 individuals. A total of 60,743 single episodes are derived from the employment diary to provide more dynamic information on transitions between labour market states throughout the survey period. The research explores aspects of both the conventional definition of unemployment as well as the broader concept of underemployment that includes discouraged job seekers or those marginally attached to the labour market and those working part-time but wanting to work more hours.

Building on the spatial labour market literature, a four level model has been developed to examine what social and spatial factors contribute to the length of time spent in unemployment in regional communities. Dependent variables have been grouped within the following broad categories: individual or human capital level effects; social reproduction of the labour market or family level effects; social embeddedness or community level effects; and state and regulatory, or national level effects.

Findings suggest that the length of time spent in unemployment is influenced by a variety of factors of a spatial and social nature, but the factors contributing to other forms of employment disadvantage did not necessarily operate under the same dynamics. Transition out of one 'poor' employment episode was often not the end of employment disadvantage, particularly for those living in regional towns.

1. Introduction

High levels of labour underutilisation particularly those of lengthy duration can result in considerable social and economic costs to communities and regions. At an individual or family level there is reduced household income and often the need for welfare support (Wilkins, 2007). At a community or public level the result is reduced taxation income as well as reduction in consumption and its flow-on effects to the wider economy. The social costs also impact upon individuals and the community in which they reside with negative pressures on health and wellbeing that can have lasting and long term intergenerational effects (Dooley and Prause, 2004).

Until very recently, Australia has experienced a lengthy period of high labour force participation and record low levels of unemployment at a national level. The picture at the sub-national level is, however, quite different. For example in May 2011 the unemployment rate for Brisbane was 4.3 percent while the balance of Queensland had an unemployment rate of 6.1 percent (included in this was the Far North Statistical region that had an unemployment rate of 10.8 percent and the Wide Bay region that had an unemployment rate of 6.9 percent) (ABS Cat.No 6291.055.001, 2011). Aggregate statistics mask what, for some local communities, could be significant problems within their local labour markets. But what drives these apparent differences and how are they produced and reproduced over time? The answer can be found in a complex interplay of social, spatial and temporal factors in addition to the workings of the economy.

Understanding the social processes and institutions that produce this inequality of employment outcomes at the sub-national level is critical given the current policy agenda aimed at moving people into work in regional areas. This study focuses on the duration of underemployment in its widest sense, as an example of employment disadvantage within regional and rural communities. The research will attempt to identify how social and spatial factors interact to create inequalities in employment outcomes.

Building on spatial labour market literature, a four level model has been developed to test the hypothesis that the length of time spent in unemployment and underemployment is dependent upon social and spatial factors specific to regional communities. Using the employment diary data from eight waves (2001 to 2008) of the Household Income and Labour Dynamics in

Australia (HILDA) survey, factors influencing the duration of unemployment are examined with an event history analysis approach. Firstly, the model will be applied to unemployment episodes to determine the effect of social and spatial influences on the length of time spent in this labour force status. Secondly, time-based underemployment and 'marginal attachment' episodes will be examined to observe the effects of the same groups of variables on time spent in each of these inadequate employment predicaments. Finally, transitions from inadequate employment episodes are examined to assess whether there are differences in transition outcomes for those living in regional towns. Identification of the factors that contribute to lengthy periods of inadequate employment will help to understand the nature of labour underutilisation within Australian regional communities.

2. Theoretical Background

Spatial labour market theory

The key to understanding labour markets is to understand the social nature of labour and the institutional means by which it is reproduced (Peck, 1996). Labour markets are socially regulated but the form this takes varies enormously along a number of trajectories including space. The spatial structuring of labour or the spatial division of labour are critical elements of the organisation of production and the organisation of society. Labour markets, at the broadest level, may be abstractions but by grounding them in the spatial domain, social scientists are able to undertake empirical research and analysis. Baum et al (2008), for example, use multi level modelling techniques to assess the impact of personal characteristics as well as regional labour market effects on unemployment and find that both are influential.

How the spatial domain is defined becomes critical to understanding how labour markets operate and how social relations interact in the sphere of production. Doreen Massey (1984, p7) argues that the spatial division of labour is determined by the spatial organisation of capital. Peck (1996) also maintains that what matters analytically in the local labour market is the social context and the processes at work within local labour markets. Peck (1996) believes labour is produced and reproduced through social institutions such as the family or household, the community and the state which operate specifically within a local context. Spatial employment, unemployment and underemployment must necessarily be

conceptualised as multi-dimensional with the social relations of production underpinning spatial or geographic distribution.

The Australian Spatial Labour Market Context

Baum et al (2008) use multi-scalar associations between individual, social and spatial factors to understand regional unemployment. Analysing HILDA wave one data, they explore unemployment in relation to both its geographic and social context, including individual and family attributes. Trendle (2002) used 1986, 1991 and 1996 ABS Census data to examine spatial variation in unemployment in Queensland finding relative stability in rates of unemployment within regions. Trendle (2002) found that spatial effects were important particularly where there were differences in regional industrial structure and demographic characteristics and that some clustering was evident. Borland (2000) considers possible causes of regional differences in unemployment, with a focus on identifying individual characteristics and at-risk groups and modelling unemployment outcomes.

Underemployment in Non-metropolitan Labour Markets

With the changing nature of the employment environment, characterised by increasingly flexible employment, part-time, casual and temporary jobs, a broader definition of unemployment and underutilisation has been developed. Fleetwood (2001) argues that unemployment should be re-conceptualised to take into account inadequate employment such as fewer hours, lower skill levels or poorer quality than desired. Rural and regional employment is expected to fare worse than large urban labour markets which benefit from the scalar or agglomeration advantages such as stronger earnings growth, greater learning and human capital formation (Freedman, 2008). Bill et al (2007) in their analysis of four waves of HILDA data find that individuals in metropolitan areas have higher job mobility, higher levels of confidence in finding another job and also greater fear of losing their job compared to those living in non-metropolitan areas. Strachan et al (2002) find that the labour market for women in regional NSW is more limited than metropolitan labour markets regardless of industry differences in regions.

Research from the United States and Canada identifies significant differences in underemployment between rural or regional workers and those living and participating in urban labour markets, with women being particularly disadvantaged (Vera-Toscano et al, 2004 and Jensen et al, 1999). In Australia, Baum et al (2008) use HILDA data (first wave –

2001) and aggregate level ABS data to explore the concept of under-utilised labour and how location impacts upon individual factors and demographic characteristics in shaping labour market outcomes. They also look at the interplay with regional and contextual effects such as population dynamics and labour demand. They suggest that population growth may have a negative effect on labour market outcomes in regional areas.

Inadequate employment

The persistence of unemployment and underemployment in Australia has been examined by both Campbell (2008) and Carroll (2006) while Wilkins (2007) looks at the consequences of underemployment. Campbell (2008) explores underemployment using ABS data from 1978 to 2007. He maintains (2008, p157) that underemployment has increased three fold over this period and developed into a major concern with levels higher than many advanced capitalist countries within the OECD. Campbell (2008) shows that the number of people who were underemployed was greater than the number who were unemployed in 2007. He finds underemployment concentrated in lower skilled occupations and within service sector industries as well as being far more prevalent within younger age groups and women (Campbell, 2008).

Carroll (2006) uses HILDA longitudinal data to examine duration of unemployment in Australia and the characteristics correlated with exiting unemployment. Using baseline hazard and unemployment survival modelling, Carroll (2006) finds that variables associated with higher wages are also associated with shorter durations of unemployment but those with higher non-wage income tended to have longer durations of unemployment. Those who had previous spells of unemployment were also more likely to have a longer unemployment duration. Carroll (2006) finds his results consistent with previous Australian research with the exception being the addition of the employment experience variable into the model which renders age insignificant.

Wilkins (2007) uses the first wave of HILDA data to look at the consequences of underemployment in comparison to the unemployed. He finds that the underemployed, particularly males, on average held a higher number of jobs a year, which was assumed to reflect possible precarious employment conditions and transitory and insecure jobs. Wilkins (2007) identifies negative consequences of underemployment are not as severe as those of unemployment per se, but these effects are still unfavourable in terms of income levels, general wellbeing and life satisfaction.

Borland and Johnston (2010) use HILDA data when looking at the effects of worker's labour market history on job duration. They use a hazard model to examine the exit from employment as well as unemployment and the impact of the worker's immediate prior labour force state on the duration of subsequent employment episodes. Findings conclude that there is a significant relationship between unemployment exits and labour force status during the preceding spell and job. Employment spell duration is also found to depend on previous spell type and exit type. They conclude that disadvantage can continue for many unemployed even when they have found work.

Gray et al (2002) use longitudinal data to look at the dynamics of labour market experiences for the marginally attached in Australia. They found that the marginal attached displayed similar features to the unemployed. While Jones et al (2005) find that marginal attachment was a distinct labour market state, located between unemployment and not in the labour force (that is those who do not wish to work). Even within this group, the marginally attached were found to have different levels of attachment to the labour force depending on whether they were waiting for a future job start or interview outcome, discouraged job seekers, or were marginally attached for personal or other reasons.

In general terms, the literature suggests that inadequate employment outcomes are determined by a complex interplay between social and spatial influences that are multi-dimensional in scale from the level of the individual to the state, and the local to the national (Peck, 1996, Baum, 2008). Employment distress is more widespread than simply being unemployed and actively looking for work. In locations where employment opportunities may be more limited this may be exacerbated. Underutilisation in the forms of underemployment and 'marginal attachment' to the labour force impacts on individuals in addition to unemployment (Gray et al, 2002, Jones et al, 2005, Wilkins, 2007, Campbell, 2008). This is considered more likely in regional locations (Vera-Toscano et al, 2004 and Jensen, 1999). To assess how these factors operate over an additional temporal dimension, longitudinal data has provided insights into unemployment, for example (Carroll, 2006; Borland and Johnston, 2010). It is believed that insights can also be gained from an analysis of wider employment inadequacy, with particular reference to regional Australia.

How do social and spatial factors influence employment distress, in this wider sense, over time? To operationalise this question, unemployment, underemployment and 'marginal attachment' to the labour force will be examined using data derived from the HILDA

employment diary. A model of social and spatial influences has been developed with covariates groupings representing the multi-dimensional influences of social institutions the individual, the family, the community and the state. An additional group of spatial variables represents the regional/city divide as well as population size and growth factors. Using event history methodology, three key questions will be examined:

1. What social and spatial factors contribute to the length of time spent in unemployment in regional communities?
2. Do the social and spatial factors that influence the duration of unemployment in regional communities have the same effect on the length of time spent in underemployment and 'marginal attachment' to the labour market?
3. Does moving out of one of the three states of employment distress necessarily result in a positive outcome for those living in regional communities?

3. Data and Methods

Data

The research uses longitudinal data collected from an employment diary over eight waves (waves 1 to 8) of the Household, Income and Labour Dynamics in Australia (HILDA) panel survey collected from 2001 to 2008. The HILDA survey is a nationally representative survey of households and individuals undertaken annually. The survey measures life in Australia over a large number of aspects of social and economic wellbeing, including labour market outcomes which provide the focus for this study.

Individual labour market experiences are drawn from a calendar of labour force activity which collects information at each interview for the proceeding 12 to 18 months, in third of the month intervals. This information is supplemented with individual and household data providing an annual snapshot of social, demographic, and economic attributes collected at the interview.

The dataset included all respondents over the age of 15 with the exception of respondents who had reached retirement age in the year of interview who were excluded. The dataset

derived from the employment diary contains 60,743 single episode records for 17,258 individuals.

Measuring employment distress using the HILDA employment diary - the dependent variables

The variables representing employment distress are derived from the detailed labour force status captured at the interview linked as closely to ABS labour force status (ABS Cat No. 6203) and International Labour Organisation definitions (Husmanns, 2007) as permits.

Unemployment is taken directly from the detailed labour force status variable where respondents are classified unemployed if they are without work, actively looking for work in the previous four weeks, and able to start employment in the reference week. Those looking for full-time and part-time work have been combined to enable comparison between wave and employment diary data.

The beginnings of employment and unemployment spells were determined from information provided at the first interview on length of time working with current employer and for unemployment the date of job search commencement if provided or calculated from the job search duration provided at the interview. For overlapping calendar data, precedence was given to the observations closest to the interview date. Duration of time spent in a spell of employment or unemployment is calculated from the start to the end of a single continuous diary episode where the respondent states they were unemployed.

Underemployed respondents are working part-time (from labour force status detail) and answered 'prefer to work more hours than you do now' to the question "If you could choose the number of hours you work each week, taking into account how that would affect your income, would you prefer to work..." (HILDA Question E6 in Wave One, Person Questionnaire). This equates to the international definition for time-related underemployment where the following criteria are required: willing and available to work additional hours with actual hours worked in reference week being below a specified cut-off (Husmann, 2007).

Using the diary, time related underemployment (working part-time but wanting to work more hours) is a derived subset of employment episodes. Spell commencement is taken as the start of the employment episode corresponding to interview date where respondent is identified as working part-time (employment status detail) and wishing to work more hours. The spell end

is determined by either a change in employment diary episode or change in employment status at subsequent interview.

'Marginal Attachment' is also taken directly from the detailed labour force status variable with respondents being classified as 'marginally attached' if they are not in the labour force, would like to work, are able to start work in the next four weeks but not actively searching for work (HILDA data dictionary, 2011). From the diary, 'marginal attachment' is derived from 'Not in Labour Force' diary episodes with corresponding interview employment status stated as being 'marginally attached'. Spell start date is either episode start or interview date if previous employment status was 'Not in Labour Force' and not 'marginally attached'. The spell continues until there is a change in diary episode employment status or employment status at subsequent interview is stated as 'Not in Labour Force' and not marginally attached.

The dependent variable used to examine the duration of unemployment, underemployment or 'marginal attachment' spell is the hazard ratio, or likelihood at a particular point in time that the respondent will leave the unemployment, underemployment or 'marginal attachment' spell by moving to a different labour force status. The Cox regression model is used to test the hazard ratio. This is a semi-parametric model that does not require a baseline hazard to be specified rather it calculates a likelihood function from a combination of individual outcome co-variables at each transition time (Cleves et al, 2010). Thus a transition can be explained from a distinct set of co-variables which may or may not be time variant (Blossfeld et al, 2007).

As an unbalanced and unweighted panel was used, there was missing data for some respondents who had not been interviewed in all waves. For respondents that had gaps between waves, the data was imputed from the previous interview and calendar. Their employment status was assumed to continue until the next calendar unless information on a job start or unemployment commencement was captured at the following interview. If a respondent left the survey, their last employment status episode was considered right censored. New respondents entering the survey after wave one were included from the time they entered utilising information about the employment episode start dates provided at the interview.

Independent Variables

A list of co-variates is set out in Table A1 below. In addition to the spatial variables, there are four clusters of co-variates to represent each element of the model, individual level or human capital variables, social reproduction of the labour market or family level variables, social embeddedness or community level variables and national and regulatory level variables. Covariates are considered time invariant and have been taken from the interview relating to the episode commencement. Episodes have been mapped from the calendar third of month sections onto a continuous daily timeframe to enable prior episode start dates and events to be integrated.

Spatial co-variates

Spatial variables have been selected to explore the effects of the metropolitan - regional - rural differences identified in the literature, both in Australia, Canada and the United States (Baum et al, 2008, Vera-Toscano, et al, 2004, and Jensen, 1999). The main spatial variable under consideration is taken from the Section of State derived variable, based on ABS standard geographical classification. This variable uses population size to determine the localities urban or rural nature. A variable 'regional town' was created to include those localities that were not major urban locations and were not rural. This variable classifies locations that have populations of more than 200 people but less than 100,000 people (other urban plus bounded localities). The variable 'rural' incorporates the rural balance and migratory classifications. In addition, derived variables representing the effects of the state have been developed to capture external population, economic, and legislative characteristics which have previously been found to influence labour market outcomes through factors such as agglomeration (Freedman, 2008, Baum et al, 2008). The groupings include the high growth 'resource rich' boom states of Queensland and Western Australia; the medium growth large states of New South Wales and Victoria; the slow growth small states of South Australia and Tasmania; and the territories of Australian Capital Territory and Northern Territory, both of which are small with medium population growth rates.

Human capital co-variates

Human capital variables selected have commonly been associated with unemployment (Borland, 2000, Borooah and Mangan, 2004, Baum, 2008 among others) and are expected to have a similar association for both underemployment and marginal attachment if these are on

an employment disadvantage continuum. Variables include gender (binary variable, female=1, 0 if not), age group (binary variable, under 25 years=1, 0 if not) (binary variable, Age 45-65 years=1, 0 if not), level of education (binary variable, degree=1, 0 if not) (binary variable, secondary only=1, 0 if not), English as a second language (binary variable, English as second language=1, 0 if not) and non English speaking country of birth (binary variable, birth country non-English speaking =1, 0 if not), Aboriginal or Torres Straits Island descent (binary variable, Aboriginal or Torres Strait Island=1, 0 if not), presence of a health condition affecting the respondents ability to work (binary variable, health condition=1, 0 if not). Several employment history variables are used to show accumulated labour force experience, these include labour market history including time in paid work (number of years in employment, 0 if nil) , time in unemployment (number of years in unemployment, 0 if nil) and time outside the labour force (number of years not in the labour force, 0 if nil). Borland and Johnston, 2010 show employment history affects job duration.

Family level co-variates

Social reproduction and the labour market or family level variables attempt to capture aspects of how the labour market is produced and reproduced. The group is comprised of family related variables as well as education being undertaken as part of labour force creation. This follows Peck's (1996) view of labour force reproduction over time and the creation and perpetration of disadvantage, in other studies these variables are often considered individual level. Variables include engagement in full time study (binary variable, education full-time student=1, 0 if not), school leaver (binary variable, left school since last interview=1, 0 if not), couple (binary variable, married or de facto partnership=1, 0 if not), presence of children in the household (binary variable, children under 15 present=1, 0 if not) and number of children (discrete variable, number of children, 0 if none), and family history relating to the labour force. This includes fathers unemployment history (binary variable, father unemployed for six months or more while growing up=1, 0 if not), and employment of parents when the respondent was 14 years old (binary variable, mother employed when 14 years old=1, 0 if not) (father employed when 14 years old=1, 0 if not). Family history was shown by Borooah and Mangan (2004) to reduce job continuity.

Community level co-variates

Social embeddedness and the community variables are an attempt to operationalise notions of social embeddedness within a community and spatial entrapment. Social embeddedness relates to strong community ties which 'attach' people to their local community and engender less mobility (Irwin, 2004). Spatial entrapment on the other hand is viewed to constrain opportunities and prevent mobility (England, 1993). These are considered to influence regional unemployment and underemployment by preventing mobility to areas with better employment opportunities. Variables utilised here are mobility in the form of moving house other than just locally (binary variable, moved more than 100 kilometres since the last interview=1, 0 if not) and intentions of moving house in the next 12 months (binary variable, intends to move in next12 months=1, 0 if not). Home ownership (binary variable, owns home=1, 0 if not) is included as it has previously been associated with lower unemployment likelihood (Battu, 2008) but is also likely to add to community embeddedness and possibly entrapment if, for example there are large price differentials between areas or there is little local employment (Beer, 2008). Community and neighbourhood satisfaction levels are also used to explore social embeddedness (ordinal variables, 1=very dissatisfied, 10=very satisfied). The level of community disadvantage is measured using the SEIFA index of disadvantage with a focus on the lowest three deciles (binary variable, SEIFA index of disadvantage lowest 3 deciles=1, 0 if not).

National level co-variates

National and regulatory effects variables represent the wider political, economic, industrial and legislative or contractual effects that may influence unemployment, underemployment and 'marginal attachment' to the labour force as well as transitional capability. Variables at the level broader than the local community can have important effects which impact differentially in a specific local context. Represented here is the industrial structure (noted by Baum, et al, 2008) and attempts to both objectively and subjectively measure the labour force opportunity structure with self assessment of job prospects and the regional unemployment rate. Casual employment has previously been linked with underemployment and unemployment and intermittent work (Watson et al, 2003) Variables are captured for the last job or current job in the case of underemployment. These include employment contract type with a focus on casual employment (binary variable, casual contract=1, 0 if not), industry of employment including retail (binary variable, retail industry=1, 0 if not), accommodation and

food (binary variable, accommodation and food industry=1, 0 if not), manufacturing (binary variable, manufacturing industry=1, 0 if not), and construction (binary variable, construction industry=1, 0 if not), and respondents perception of the labour market. This includes respondents subjective perception of their labour market prospects relating to the chances of finding and accepting a good job within the next 12 months (continuous variable, percentage chance of finding good job), and the level of dissatisfaction with their employment prospects (binary variable, dissatisfied with employment opportunities=1, 0 if not). A further variable provides a more objective measure through the unemployment rate for the ABS major statistical region within which the respondent resides (continuous variable, rate of unemployment in major statistical region).

Statistical modelling

The research uses event history analysis to determine the factors that influence the duration of unemployment, underemployment or marginal attachment spells. A Cox semi-parametric proportional hazard regression analysis model is fitted to the data which regresses time to failure, or hazard function, which in this case the movement out of the spell.

Longitudinal data has been organised into a multi-episode multi-state dataset with a single record for each employment episode for each respondent. The co-variate demographic data has been treated as time constant using data corresponding to the commencement of each episode derived from the wave dataset with the interview date immediately prior to the corresponding episode start date. The Cox regression is clustered on an individual's identity to provide a robust adjusted standard error.

The reference group for comparative purposes is male, aged 25 to 44, resident in a major city of a large, medium growth state, Australian born, non-Aboriginal, sub-degree educated, non-student, non-school leaver, single, living in a household with no children in the top seven deciles of the SEIFA index of disadvantage, has not moved residence in the last year, does not own his own home, and has previously not worked in a casual job. The reference group do not work in retail, accommodation or food, manufacturing or construction industries and are not dissatisfied with their employment opportunities.

4. Results

The results from the Cox regression for the three models, unemployment, underemployment and 'marginal attachment' to the labour market are shown in Tables 1 - 3. All results are hazard ratios.

What social and spatial factors contribute to the length of time spent in unemployment in regional communities?

To determine the social and spatial factors that influence the length of time spent in unemployment for those living in regional communities a Cox regression model was used on data drawn from the HILDA employment diary collected between 2001 and 2008. The resulting hazard ratios for the exit from unemployment are shown in table 1 below. There were 10,222 episode observations from 5,470 respondents who experienced an episode of unemployment. Among this group there were 9,309 failures, or exits from unemployment.

Spatial influences

Compared to the reference group (large state, medium population growth), those respondents who were living in faster growing states of Western Australia and Queensland had a hazard rate of leaving unemployment that was eleven percent higher ($p=0.001$, $SE=0.03$). During the model development, those living in regional towns had a hazard rate of leaving unemployment that was eight percent lower while those living in rural areas had a hazard rate that was ten percent lower, however, once the unemployment rate was added this effect was no longer significant. Living in a medium growth small state such as Australian Capital Territory or Northern Territory also increased the rate of leaving unemployment by 19 percent but this was also rendered not significant once the unemployment rate was added.

Human capital influences

For the co-variables at the individual or personal level, a number of variables had a statistically significant influence on the hazard rates for leaving unemployment. Being female meant the chances of leaving unemployment were five percent higher ($p=0.071$, $SE=0.03$). Age was also an important determinant on duration of unemployment with those under 25 years having a nine percent lower hazard ratio than the control group ($p=0.053$, $SE=0.04$) while those aged between 45 and 65 years had a hazard ratio that was 27 percent lower ($p<0.001$, $SE=0.04$). Being degree educated produced a higher hazard rate, with those having degree

level education having an 18 percent higher rate of exit ($p < 0.001$ SE=0.05). This compares with those having only completed secondary school who had a 14 percent lower hazard rate for unemployment ($p < 0.001$ SE=0.03).

Having a health condition that impacted upon the ability to work provided a hazard rate that was 17 percent lower for those unemployed ($p < 0.001$ SE=0.03). Being of Aboriginal or Torres Strait Island descent led to longer unemployment durations with a hazard rate of 0.76 ($p < 0.001$ SE=0.05). Employment history had an effect on the duration of unemployment, with each year of employment history increasing the hazard ratio by one percent ($p < 0.001$ SE=0.002). A history of unemployment reduced the hazard rate for unemployment by nine percent for each year unemployed ($p < 0.001$ SE=0.01). A history of time outside the labour market reduced the hazard rate by one percent for each year spent outside the labour force ($p = 0.006$, SE=0.003).

Family influences

Family level variables that represent social reproduction and the labour market affected the hazard rate for leaving unemployment. Being a school leaver increased the hazard rate for leaving unemployment by eight percent ($p = 0.093$, SE=0.05). Living in a household with children reduced the hazard rate of leaving unemployment by 10 percent ($p < 0.001$ SE=0.03). The number of children however had the opposite effect. More children increased the hazard rate by 12 percent for each additional child ($p < 0.001$ SE=0.03). Family history variables were significant when modelling the exit from unemployment with fathers and mothers employment when the respondent was 14 years old increasing the hazard rate by 10 percent ($p = 0.007$, SE=0.04) and eight percent ($p = 0.003$, SE=0.03) respectively. Father's history of unemployment had no significant effect on the exit from unemployment.

Community influences

Variables within the social embeddedness and community grouping had some effect on the unemployment model. Moving more than a hundred kilometres since the last interview increased the hazard rate by 24 percent ($p < 0.001$, SE=0.06) while having an intention to move house in the next year increased the hazard rate by seven percent ($p = 0.026$, SE=0.03). Thus mobility variables acted to reduce the duration of unemployment when compared to the reference group. Home ownership also reduced the duration of unemployment by increasing the hazard rate by eight percent ($p = 0.007$, SE=0.03). Residing in a location that fell within

the lowest three SEIFA's index of disadvantage reduced the exit rate from unemployment by 12 percent ($p < 0.001$ SE=0.03).

National influences

Within the state and regulatory effects group of co-variates, respondents had an exit rate 36 percent higher if they had worked on a casual contract in their previous job ($p < 0.001$ SE=0.04). Having worked in the construction industry increased the exit rate from unemployment by fourteen percent ($p = 0.022$, SE=0.07), while having worked in manufacturing also resulted in a ten percent higher rate for the unemployed when compared to the reference group ($p = 0.026$, SE=0.05). Having worked in the accommodation and food industry in the previous job increased the hazard rate by seven percent ($p = 0.074$, SE=0.04). The level of subjective and objective employment opportunities within the region lowered the exit rate. Those who were dissatisfied with their perceived employment opportunities had a 33 percent lower exit rate from unemployment ($p < 0.001$ SE=0.02) while the unemployment rate at the broad regional level lowered the exit rate by nine percent for each percentage increase in the unemployment rate ($p < 0.001$ SE=0.01).

Overall, these results imply that a mix of social and spatial factors at various scalar levels impact upon the duration of unemployment episodes.

Do the social and spatial factors that influence the duration of unemployment in regional communities have the same effect on the length of time spent in underemployment and 'marginal attachment' to the labour market?

Underemployment

A Cox regression analysis was used to model the spatial and social influences on the duration of underemployment in regional towns as derived from the HILDA employment diary to determine similarities to unemployment duration. Table 2 below shows the hazard ratios for the exit from underemployment. Within this model there were 6,013 observations from 4,010 respondents and 4,810 exits.

Spatial influences

There were no significant effects on duration of underemployment for those living in regional or rural locations in comparison to the reference group located in major urban localities. The

hazard ratio was, however, nine percent higher for those living in the faster growing states of Queensland and Western Australia ($p=0.014$, $SE=0.04$).

Human capital influences

Gender was an important dynamic in determining the duration of underemployment with females having an 11 percent lower rate of exit from underemployment than males ($p=0.001$, $SE=0.03$). Also significant was the presence of a health condition that impacted upon the respondents ability to work, this increased the hazard rate by 10 percent ($p=0.06$, $SE=0.06$). A history of unemployment also contributed to an increased hazard rate with a two percent increase for each year spent in unemployment ($p=0.049$, $SE=0.01$).

Family influences

The only variables within this group that had any significant effect on the duration of underemployment were full-time studying and the number of school aged children the respondent had. There was a reduction in the hazard rate by four percent for each child ($p=0.06$, $SE=0.02$). Those that were full-time students had a hazard rate that was seven percent lower ($p=0.09$, $SE=0.04$).

Community influences

Mobility played a part in the determination of the duration of underemployment with those moving at least 100 km's since the previous interview having a hazard rate that was 42 percent higher ($p<0.001$ $SE=0.11$) while those that intended to move had a hazard rate that was 14 percent higher ($p<0.001$ $SE=0.04$). Home owners, however, had a hazard rate that was seven percent lower ($p=0.008$, $SE=0.03$).

National influences

Employment on a casual contract increased the hazard rate for exiting underemployment by 23 percent ($p<0.001$ $SE=0.04$). Those employed in the manufacturing and construction industries had higher hazard rates, with construction increasing the hazard rate by 22 percent ($p=0.022$, $SE=0.10$) and manufacturing increasing the rate by 30 percent ($p=0.001$, $SE=0.10$). Working in retail, however, reduced the hazard rate by seven percent ($p=0.063$, $SE=0.04$). Those that were dissatisfied with their employment opportunities had a higher hazard rate (1.13, $p=0.005$, $SE=0.05$) compared to those who were satisfied. The duration of underemployment was also influenced by the unemployment rate within the major statistical

region of the respondent with an increase of one percent in the unemployment rate equating to a four percent reduction in the hazard rate for leaving underemployment ($p < 0.001$, $SE = 0.01$).

While some of the variables that influenced the length of time spent in unemployment were the same for underemployment duration, other variables had no effect. Some variables had an influence but in a different direction. Variables that had similar influences were; residing in a fast growing large population state (QLD and WA), intention to move, casual employment in current or previous jobs, employment within the manufacturing and construction industries, and the unemployment rate. Variables that had differing effects were; being female, having a health condition that affected the ability to work, a history of unemployment, number of children, and dissatisfaction with employment opportunities. Working in retail had a significant effect on duration of underemployment but no effect on length of time spent in unemployment. Regional town and rural residence had no effect on duration of underemployment at any stage during the model construction for underemployment.

'Marginal attachment'

The length of time spent 'marginally attached' to the labour force, was also tested using a Cox regression model to determine whether the social and spatial factors influencing unemployment duration also influenced time in 'marginal attachment'. Table 3 below shows the hazard ratios for the exit from 'marginal attachment'. Within this model there were 4,877 observations from 3,334 respondents, with 4,051 exits.

Spatial influences

There was no statistically significant association between the duration of 'marginal attachment' episodes and regional or rural residence for respondents when compared to the reference group of major urban dwellers. Spatially, the only significant effect on the hazard ratio for leaving 'marginal attachment' was for those living in smaller, low growth states such as Tasmania and South Australia where the hazard rate was 12 percent higher ($p = 0.03$, $SE = 0.06$).

Human capital influences

Several individual level variables affected the exit rate from 'marginal attachment' episodes. Those under 25 years of age had a hazard rate that was 21 percent higher than the reference

group ($p=0.004$, $SE=0.08$). The level of education was important, with respondents holding degree level qualifications having a hazard rate that was 28 percent higher ($p<0.001$, $SE=0.09$), while those with only secondary education had a hazard rate that was eight percent lower ($p=0.079$, $SE=0.04$). Having a health condition that affected the ability to work led to a reduced hazard rate of 0.9 ($p=0.016$, $SE=0.04$). Previous employment history raised the hazard rate by one percent for each year of experience in the labour force ($p=0.001$, $SE=0.003$).

Family influences

Students who were continuing their education but 'marginally attached' to the labour force had a hazard rate that was 9 percent lower ($p=0.088$, $SE=0.05$). While those that had left school since the previous interview had a hazard rate that was 26 percent higher ($p=0.001$, $SE=0.09$). Those who were married or living in a de facto relationship tended to have a shorter duration of 'marginal attachment' episodes with a hazard rate that was 11 percent higher than those who were not in a partnership ($p=0.029$, $SE=0.05$). Living in a household with children reduced the hazard rate by 17 percent ($p<0.001$, $SE=0.03$) but the number of children increased the hazard rate by eight percent for each child ($p=0.005$, $SE=0.03$).

Community influences

There were significant effects on the hazard ratio relating to mobility for those who experienced an episode of 'marginal attachment' with those that had moved 100 kilometres or more since the last interview having a hazard rate that was 36 percent higher ($p<0.001$, $SE=0.11$). Home ownership, however, increased the hazard rate by ten percent ($p=0.008$, $SE=0.04$).

National influences

'Marginally attached' respondents who had worked in a casual job in their last job had a hazard rate that was 24 percent higher than those who had not ($p<0.001$, $SE=0.07$). Those that had worked in construction also had shorter durations with a hazard ratio for exiting 'marginal attachment' episodes that was 30 percent higher than the reference group ($p=0.005$, $SE=0.12$). Those who had worked in the accommodation and food industry, likewise had shorter durations with a hazard ratio of 1.37 ($p<0.001$, $SE=0.08$) and those who had previously worked in retail had a hazard ratio of 1.18 ($p=0.002$, $SE=0.06$). The

unemployment rate for the major statistical region reduced the hazard rate by three percent for each percentage increase ($p=0.004$, $SE=0.01$).

Once again, there were several variables that had similar effects for both unemployment duration and time spent in 'marginally attached' to the labour force. These included having degree level education, secondary education only, having a health condition that effected the ability to work, prior employment history, being a school leaver, having children under 15 in the household, the number of children, owning a home, working in a casual job in the last job, working in construction or accommodation and food industries and the unemployment rate for the region. Only one variable had a differing effect which was age under 25 which increased the hazard rate for 'marginal attachment' but reduced the hazard rate for unemployment. Several variables that had no effect on unemployment duration were significant for 'marginal attachment' duration. These included living in South Australia or Tasmania, being a student, being married or in a de facto partnership, and working in retail in the job prior to the episode.

Does moving out of one of the three states of employment distress necessarily result in a positive outcome for those living in regional communities?

An examination of transition destinations for those living in regional towns compared to those living in major cities or rural localities shows that in addition to the duration differentials, there are differences in the future employment status transitioned to on exit from an episode of unemployment, underemployment and 'marginal attachment'. Table 4 shows transition outcomes for regional urban respondents and table 5 shows transition outcomes for respondents residing in major city localities.

Unemployed respondents living in regional towns are less likely to transition into employment, with 55.29 percent of those leaving an unemployment spell gaining employment with satisfactory hours. This compares to 60.58 percent of those living in major cities or rural areas. Regional town respondents leaving unemployment were also more likely to move to underemployment, taking a job with fewer hours than desirable, than their city counterparts with 18.57 percent compared to 15.53 percent becoming underemployed. A higher proportion of unemployed regional town residents exited the labour force at the end of an unemployment spell, with 8.64 percent becoming 'marginally attached' and 17.5 percent leaving the labour force entirely. This compares to 7.4 percent of non-regional unemployed becoming 'marginally attached' and 16.49 percent moving out of the labour force.

Respondents living in regional towns who experienced a spell of underemployment were also slightly less likely to have a 'positive' transition into employment where they were satisfied with the hours of work with 62.54 percent finding satisfactory working hours compared to almost 65 percent of city dwellers. A period of unemployment was more likely for those transitioning from underemployment in regional towns, with almost twenty percent finding themselves in this position compared to 16.85 percent of those living in major cities or rural/remote locations.

Those moving out of 'marginal attachment' were also less likely to move into employment if they lived in a regional town, with 31.53 percent doing this compared to 33.24 percent of major city dwellers. A slightly higher proportion, however, moved into employment with fewer hours than desirable. 'Marginally attached' respondents living in regional towns were also more likely to move into unemployment with 37.11 percent doing this compared to 34.76 percent of non-regional respondents.

Differences were also evident for those leaving a spell of employment between regional respondents and non-regional respondents. Those living in regional towns were more likely transition from employment to unemployment with just over a third of those leaving employment doing this compared to 30 percent of non-regional respondents. Those living in major cities were more likely to end an employment spell by moving out of the labour force, than regional dwellers (44.12 percent compared to 42.25 percent).

5. Discussion

The social and spatial impact upon the duration of inadequate employment episodes and transitional outcomes is a complex interplay between many factors operating at an individual level, at the level of the family and social reproduction, within the community and under the auspices of the framework established by the state and associated regulation. But are these substantively different for those living in regional locations compared to major cities?

How long a respondent spends in the labour force state is also influenced by a variety factors both spatial and social. Those living in regional towns spent longer in unemployment as did those living in rural locations, if the broad regional unemployment rate is removed from the equation. However there appears to be no significant difference in duration of underemployment or 'marginal attachment' for those living in metropolitan and regional localities. The state lived in, in many cases, does affect how long respondents will spend in a

spell, supporting Baum et al's (2008) view that the population structure may play a role in employment disadvantage. Unemployment and underemployment spells were shorter for those living in fast growing high population states of Queensland and Western Australia, but those living in smaller slow growing states were likely to experience longer durations of 'marginal attachment'.

Human capital factors had a considerable impact on the duration of unemployment episodes but surprisingly much less impact on the length of time spent in underemployment or 'marginal attachment' episodes. Factors affecting time in unemployment included gender, age, level of education, health status, aboriginal descent and previous employment, unemployment and experience out of the labour force. These findings generally reflect previous studies on unemployment (Carroll, 2006). However, unlike the findings of Carroll (2006) non-English speaking country of birth being is not significant due to the inclusion of spatial variables.

Unemployment duration was also influenced by a number of family level variables including entry to the labour market (school leaver) and the presence and number of children. Unlike Carroll's (2006) finding for exits to employment, family history variables in the form of mother and fathers employment were significant. This illustrates and supports Peck's (1996) theory of the social reproduction of labour market disadvantage through intergenerational effects.

At the community level, mobility, home ownership and level of disadvantage had significant effects on duration of unemployment supporting Battu's (2008) finding that home ownership has a positive effect. However, so did the propensity to migrate which can be at times constrained by home ownership (Beer, 2008). At the national level, working in a casual position in the last job led to shorter durations, perhaps indicating a willingness to work in casual positions in the future. Previous employment in several industries also led to faster exits from unemployment. And finally, a higher unemployment rate in the major statistical region was associated with longer durations of unemployment, which was confirmed by respondents' subjective assessment of dissatisfaction with employment opportunities.

Are the factors that influenced unemployment duration operating the same way on the length of time spent in other states of employment disadvantage? The findings show that very few factors have a significant effect over the employment disadvantage continuum in a similar manner. The unemployment rate for the major statistical region had the effect of lengthening the duration for all three groups, but this was more pronounced for the unemployed.

Employment on a casual contract in current or previous jobs had the effect of lowering the duration in all three groups, again the effect was more pronounced for the unemployed. Similarly, current or previous employment in the construction industry had a positive effect increasing the hazard rate for exit from each group.

There was more commonality of influences on duration for the unemployed and the 'marginally attached' than for unemployment and underemployment. Similar influences were evident for those with degree level education, secondary education only, employment history, school leaver, children, number of children, home ownership, and working in the accommodation and food industry. Being under 25 years of age, however was positive for exit from marginal attachment but led to longer durations for the unemployed.

Home ownership and the number of children led to shorter durations for both the 'marginally attached' and the unemployed but longer durations for the underemployed. Other factors that varied for the underemployed were longer durations for females compared to the unemployed and longer durations if employed in retail compared to those who had previously worked in this industry and were currently 'marginally attached'. Having a health condition that limited the respondent's ability to work lengthened the duration of unemployment and 'marginal attachment' but reduced the length of time spent in underemployment.

Differences in transition outcomes are also apparent between regional town respondents and those living in major cities and rural areas. Transitions from all states under consideration, unemployment, underemployment and 'marginal attachment' were less 'positive' for those living in regional localities. That is, those experiencing these episodes were less likely to transition into employment that had a satisfactory number of hours.

The factors that determine the length of time spent in employment disadvantage, either unemployed, 'marginally attached' to the labour force, or underemployed in a part-time work, vary across both the social and spatial landscape. The social and spatial influences that create and sustain this employment inequality operate at a number of levels from the level of individual human capital, through to the family, the local community and to the broader social, regulatory and industrial structures of the labour force. The dynamics differ not only across space but across the spectrum of employment disadvantage. Transitioning out of one poor 'episode' is often not the end of employment disadvantage. For many, particularly those living in regional towns, the end of one episode of disadvantage can mean remaining outside satisfactory employment.

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Table 1. Cox regression results comparing of five different model specifications for the exit from unemployment episodes, hazard ratio and standard error, HILDA Waves 1-8 employment diary.

	Spatial		Human Capital		Family		Community		National		National + Unemployment Rate	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.								
QLD/WA	1.17***	0.04	1.18***	0.04	1.19***	0.04	1.20***	0.04	1.14***	0.04	1.11***	0.03
NT/ACT	1.50***	0.12	1.38***	0.11	1.36***	0.11	1.27***	0.10	1.19**	0.09	0.99	0.08
SA/TAS	0.88**	0.04	0.94	0.05	0.95	0.05	0.98	0.05	0.95	0.04	1.04	0.05
Regional town	0.81***	0.03	0.87***	0.03	0.88***	0.03	0.89***	0.03	0.92**	0.03	1.00	0.03
Rural	0.89**	0.04	0.89**	0.05	0.89**	0.04	0.85***	0.04	0.90**	0.04	0.97	0.04
Female			1.05	0.03	1.04	0.03	1.03	0.03	1.07**	0.03	1.05*	0.03
Under 25			0.90**	0.04	0.90**	0.05	0.90**	0.05	0.91**	0.04	0.91*	0.04
Age 45_65			0.70***	0.04	0.70***	0.04	0.70***	0.04	0.76***	0.04	0.73***	0.04
Degree			1.24***	0.06	1.25***	0.06	1.19***	0.06	1.18***	0.06	1.18***	0.05
Secondary Education only			0.84***	0.03	0.85***	0.03	0.85***	0.03	0.86***	0.03	0.86***	0.03
Health condition			0.77***	0.03	0.78**	0.03	0.79***	0.03	0.85***	0.03	0.83***	0.03
English 2nd language			0.79***	0.07	0.82**	0.08	0.86*	0.08	0.90	0.08	0.90	0.08
Aboriginal			0.68***	0.05	0.71***	0.05	0.73***	0.05	0.76***	0.05	0.76***	0.05
Birth country non-English speaking			0.88	0.07	0.89	0.08	0.89	0.08	0.92	0.08	0.90	0.08
History employment			1.01**	0.00	1.00**	0.00	1.00**	0.002	1.01***	0.002	1.01***	0.002
History unemployment			0.89***	0.01	0.89***	0.01	0.90***	0.01	0.91***	0.01	0.91***	0.01
History OSLM			0.98***	0.00	0.98***	0.00	0.99***	0.003	0.99***	0.003	0.99***	0.003
Student					0.99	0.04	0.98	0.04	0.99	0.04	0.97	0.04
School leaver					1.11**	0.05	1.12**	0.05	1.10**	0.05	1.08*	0.05
Couple					1.03	0.04	1.03	0.04	1.03	0.03	1.03	0.03

	Spatial		Human Capital		Family		Community		National		National + Unemployment Rate	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.								
Children in Household					0.87***	0.03	0.89***	0.03	0.91***	0.03	0.90***	0.03
No of children					1.17***	0.03	1.16***	0.03	1.11***	0.03	1.12***	0.03
Father unemployed					0.96	0.04	0.97	0.04	1.01	0.04	1.01	0.04
Father employed					1.15***	0.04	1.13***	0.04	1.12***	0.04	1.10***	0.04
Mother employed					1.14***	0.03	1.13***	0.03	1.11***	0.03	1.08***	0.03
Move 100km+							1.33***	0.06	1.29***	0.06	1.24***	0.06
Move intention							1.08**	0.03	1.06*	0.03	1.07**	0.03
Home owner							1.06*	0.03	1.08***	0.03	1.08***	0.03
Community satisfaction							1.00	0.01	0.99	0.01	0.99*	0.01
Neighbourhood satisfaction							1.00	0.01	0.99	0.01	0.99	0.01
SEIFA_SED3							0.84***	0.03	0.87***	0.03	0.88***	0.03
Casual									1.33***	0.04	1.36***	0.04
Chances of good job									1.00***	0.0004	1.00***	0.0004
Retail									1.03	0.04	1.04	0.04
Accom & food									1.06	0.04	1.07*	0.04
Manufacturing									1.08*	0.05	1.10**	0.05
Construction									1.14**	0.07	1.14**	0.07
Dissatisfied opportunities									0.64***	0.02	0.67***	0.02
Unemployment Rate MSR											0.91***	0.01
Observations	10,222											
Subjects	5,470											
Failures	9,307											
Prob > chi2	0.00											

Note : *** p<0.01, ** p<0.05, * p<0.1

Table 2 Cox regression results comparing of five different model specifications for the exit from underemployment episodes, hazard ratio and standard error, HILDA Waves 1-8 employment diary.

	Spatial		Human Capital		Family		Community		National		National + Unemployment Rate	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.								
QLD/WA	1.13***	0.04	1.13***	0.04	1.12***	0.04	1.11***	0.04	1.10***	0.04	1.09**	0.04
NT/ACT	1.27**	0.12	1.27***	0.11	1.26**	0.11	1.24**	0.11	1.25***	0.11	1.15	0.10
SA/TAS	0.99	0.05	0.98	0.05	0.97	0.05	0.96	0.05	0.95	0.05	1.00	0.05
Regional town	1.00	0.04	1.00	0.04	0.99	0.04	0.98	0.04	0.98	0.04	1.03	0.04
Rural	0.93	0.05	0.96	0.05	0.97	0.05	0.97	0.05	0.98	0.05	1.01	0.05
Female			0.87***	0.03	0.87***	0.03	0.87***	0.03	0.90***	0.03	0.89***	0.03
Under 25			1.04	0.06	1.06	0.07	1.08	0.07	1.06	0.07	1.05	0.07
Age 45_65			0.93	0.06	0.92	0.06	0.94	0.06	0.93	0.06	0.92	0.06
Degree			1.08	0.05	1.08	0.05	1.07	0.05	1.09*	0.05	1.08	0.05
Secondary Education only			0.95	0.04	0.96	0.04	0.97	0.04	0.97	0.04	0.96	0.04
Health condition			1.13**	0.06	1.11*	0.06	1.10*	0.06	1.11**	0.06	1.10*	0.06
English 2nd language			0.95	0.11	0.93	0.10	0.90	0.10	0.87	0.09	0.86	0.09
Aboriginal			1.09	0.12	1.08	0.12	1.08	0.12	1.09	0.11	1.08	0.11
Birth country non-English speaking			0.96	0.10	0.97	0.10	0.99	0.10	1.02	0.10	1.02	0.10
History employment			0.99**	0.003	0.99***	0.003	0.99**	0.003	1.00*	0.003	1.00	0.003
History unemployment			1.02**	0.01	1.02**	0.01	1.02**	0.01	1.02	0.01	1.02**	0.01
History OSLM			1.00	0.004	1.00	0.004	1.00	0.004	1.00	0.004	1.00	0.004
Student					0.90**	0.04	0.93*	0.04	0.93*	0.04	0.93*	0.04
School leaver					1.03	0.06	1.04	0.06	1.05	0.06	1.04	0.06
Couple					1.02	0.04	1.04	0.04	1.05	0.04	1.05	0.04
Children in Household					1.00	0.04	1.03	0.04	1.04	0.04	1.03	0.04

	Spatial		Human Capital		Family		Community		National		National + Unemployment Rate	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.								
No of children					0.94**	0.02	0.95**	0.02	0.95**	0.02	0.96*	0.02
Father unemployed					1.01	0.05	1.00	0.05	1.00	0.05	1.00	0.05
Father employed					1.03	0.05	1.02	0.04	1.00	0.04	0.99	0.04
Mother employed					0.97	0.03	0.97	0.03	0.98	0.03	0.97	0.03
Move 100km+							1.46***	0.12	1.44***	0.12	1.42***	0.11
Move intention							1.14***	0.04	1.14***	0.04	1.14***	0.04
Home owner							0.92**	0.03	0.92**	0.03	0.93**	0.03
Community satisfaction							1.01	0.01	1.01	0.01	1.01	0.01
Neighbourhood satisfaction							0.99	0.01	0.99	0.01	0.99	0.01
SEIFA_SED3							0.96	0.03	0.95	0.03	0.96	0.03
Casual									1.22***	0.04	1.23***	0.04
Chances of good job									1.00**	0.0004	1.00**	0.0004
Retail									0.92*	0.04	0.93*	0.04
Accom & food									1.00	0.04	1.01	0.04
Manufacturing									1.29***	0.10	1.30***	0.10
Construction									1.22**	0.11	1.22**	0.10
Dissatisfied opportunities									1.11**	0.05	1.13***	0.05
Unemployment Rate MSR											0.96***	0.01
Observations	6,013											
Subjects	4,010											
Failures	4,810											
Prob > chi2	0.00											

Note : *** p<0.01, ** p<0.05, * p<0.1

Table 3 Cox regression results comparing of five different model specifications for the exit from 'marginal attachment' episodes, hazard ratio and standard error, HILDA Waves 1-8 employment diary.

	Spatial		Human Capital		Family		Community		National		National + Unemployment Rate	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.								
QLD/WA	1.05	0.04	1.08**	0.04	1.09**	0.04	1.10**	0.04	1.07*	0.04	1.06	0.04
NT/ACT	1.02	0.12	0.99	0.12	0.99	0.12	0.98	0.11	1.01	0.12	0.94	0.11
SA/TAS	0.99	0.05	1.04	0.05	1.05	0.05	1.07	0.05	1.08	0.05	1.12**	0.06
Regional town	0.95	0.04	0.98	0.04	1.00	0.04	0.99	0.04	1.00	0.04	1.03	0.04
Rural	1.01	0.05	1.00	0.05	1.02	0.05	0.98	0.05	1.01	0.05	1.03	0.05
Female			0.94	0.04	0.97	0.04	0.96	0.04	0.95	0.04	0.94	0.04
Under 25			1.25***	0.07	1.22***	0.08	1.22***	0.08	1.21***	0.08	1.21***	0.08
Age 45_65			1.03	0.07	0.96	0.07	0.94	0.07	1.02	0.07	1.00	0.07
Degree			1.28***	0.09	1.27***	0.09	1.25***	0.09	1.29***	0.09	1.28***	0.09
Secondary Education only			0.86***	0.04	0.87***	0.04	0.88***	0.04	0.92*	0.04	0.92*	0.04
Health condition			0.84***	0.04	0.82***	0.04	0.83***	0.04	0.90**	0.04	0.90**	0.04
English 2nd language			0.80*	0.10	0.80*	0.10	0.81	0.10	0.83	0.11	0.84	0.11
Aboriginal			0.92	0.07	0.96	0.07	0.97	0.08	1.03	0.08	1.02	0.08
Birth country non-English speaking			1.14	0.13	1.14	0.13	1.15	0.13	1.11	0.13	1.10	0.13
History employment			1.01***	0.003	1.01**	0.003	1.01**	0.003	1.01***	0.003	1.01***	0.003
History unemployment			1.01	0.01	1.01	0.01	1.01	0.01	1.01	0.01	1.01	0.01
History OSLM			0.99***	0.003	0.99***	0.003	0.99***	0.003	1.00	0.004	1.00	0.003
Student					0.92	0.05	0.91*	0.05	0.91	0.05	0.91*	0.05
School leaver					1.32***	0.09	1.29***	0.09	1.26***	0.09	1.26***	0.09
Couple					1.09*	0.05	1.07	0.05	1.10**	0.05	1.11**	0.05
Children in Household					0.81***	0.03	0.82***	0.03	0.83***	0.03	0.83***	0.03

	Spatial		Human Capital		Family		Community		National		National + Unemployment Rate	
	Haz. Ratio	Std. Err.	Haz. Ratio	Std. Err.								
No of children					1.09***	0.03	1.09***	0.03	1.08***	0.03	1.08***	0.03
Father unemployed					0.93	0.04	0.94	0.04	0.95	0.04	0.95	0.04
Father employed					1.09**	0.05	1.08*	0.05	1.05	0.04	1.03	0.04
Mother employed					1.04	0.04	1.04	0.04	1.01	0.03	1.01	0.03
Move 100km+							1.45***	0.12	1.37***	0.11	1.36***	0.11
Move intention							1.09**	0.05	1.02	0.04	1.03	0.04
Home owner							1.09**	0.04	1.10**	0.04	1.10***	0.04
Community satisfaction							1.01	0.01	1.01	0.01	1.00	0.01
Neighbourhood satisfaction							1.00	0.01	1.00	0.01	1.00	0.01
SEIFA_SED3							0.96	0.04	0.99	0.04	0.99	0.04
Casual									1.20***	0.07	1.24***	0.07
Chances of good job									1.01***	0.001	1.01***	0.001
Retail									1.20***	0.06	1.18***	0.06
Accom & food									1.38***	0.08	1.37***	0.08
Manufacturing									1.02	0.09	1.01	0.08
Construction									1.32***	0.12	1.30***	0.12
Dissatisfied opportunities									1.02	0.04	1.03	0.04
Unemployment Rate MSR											0.97***	0.01
Observations	4,877											
Subjects	3,334											
Failures	4,051											
Prob > chi2	0.00											

Note : *** p<0.01, ** p<0.05, * p<0.1

Table 4 Cross-tabulation of employment episode status by future employment status on episode exit for regional town locality respondents, percent

Current Employment Status	Future Employment Status					Total	N
	Employed	Underemployed	Unemployed	Marginally attached	Not in labour force		
Employed	0	13.6	33.97	10.17	42.25	100	3,903
Underemployed	62.54	0	19.82	1.28	16.37	100	1,332
Unemployed	55.29	18.57	0	8.64	17.5	100	2,617
Marginally attached	31.53	5.14	37.11	0	26.22	100	1,148
Not in labour force	53.47	11.85	22.9	11.78	0	100	2,886
Total	35.21	11.93	22.52	8.24	22.09	100	11,886

Pearson chi2(16) = 5.1e+03 Pr = 0.000

Table 5 Cross-tabulation of employment episode status by future employment status on episode exit for major city and rural locality respondents, percent

Current Employment Status	Future Employment Status					Total	N
	Employed	Underemployed	Unemployed	Marginally attached	Not in labour force		
Employed	0	14.88	30.6	10.4	44.12	100	10,596
Underemployed	64.69	0	16.85	1.52	16.94	100	3,478
Unemployed	60.58	15.53	0	7.4	16.49	100	6,690
Marginally attached	33.24	4.82	34.76	0	27.18	100	2,903
Not in labour force	53.9	10.85	24.53	10.72	0	100	7,932
Total	36.53	11.45	21.47	7.91	22.65	100	31,599

Pearson chi2(16) = 1.4e+04 Pr = 0.000

Appendix

Table A1 Variable List and Definitions

Variable	Definition	Type
Spatial influences		
QLD/WA	High growth state - Fast growing, resource economy - QLD & WA	Dummy
NT/ACT	Medium growth small state - NT & ACT	Dummy
SA/TAS	Lower growth smaller State - SA & TAS	Dummy
Regional town	Non major urban locality - Other urban and bounded localities - ABS	Dummy
Rural	Rural and remote localities -ABS	Dummy
Human capital influences		
Female	Gender female	Dummy
Under 25	Age under 25 years	Dummy
Age 45_65	Age 45 to 65 years	Dummy
Degree	Education higher - Degree level	Dummy
Secondary Ed	Secondary education only	Dummy
Health condition	Health condition impacts on ability to work	Dummy
English 2nd language	English is second language	Dummy
Aboriginal	Aboriginal or Torres Straits Islander	Dummy
Birth country non-English	Country of birth not English speaking	Dummy
History employment	Employment history - time in paid work	Years
History unemployment	Unemployment history - time unemployed looking for work	Years
History OSLM	Out of labour force history - time outside of labour force	Years
Family influences		
Student	Student - engaged in full-time study	Dummy
School leaver	School leaver - left school since last interview	Dummy
Couple	Marital status - married or defacto partnership	Dummy
Children in HHold	Children in household under 15 years old	Dummy
No of children	Number of school aged children	Number
Father unemployed	Family history - father unemployed for 6 months of more while growing up	Dummy
Father employed	Family history - father employed when you were 14 years old	Dummy
Mother employed	Family history - mother employed when you were 14 years old	Dummy
Community influences		
Move 100km+	Mobility - moved house more than 100km since last wave	Dummy
Move intention	Likelihood of moving house in next 12 Months	Dummy
Home owner	Housing tenure - home ownership	Dummy
Community satisfaction	Community satisfaction - feeling part of your local community (Likert Scale 0-10 with 10 being very satisfied)	Number
Neighbourhood satisfaction	Neighbourhood satisfaction - level of satisfaction with the neighbourhood you live in (Likert Scale 0-10 with 10 being very satisfied)	Number
SEIFA_SED3	SEIFA index of disadvantage lowest three deciles	Dummy
National influences		
Casual	Casual employment contract ABS definition	Dummy
Chances of good job	Perception of labour market prospects - percent chance of finding and accepting a good job in next 12 months	Percent

Retail	Industry - employed in retail last job or current job	Dummy
Accom & food	Industry - employed in accommodation and food last job or current job	Dummy
Manufacturing	Industry - employed in manufacturing last job or current job	Dummy
Construction	Industry - employed in construction last job or current job	Dummy
Dissatisfied opportunities	Dissatisfaction with employment opportunities (4/10 or below on Likert Scale)	Dummy
Unemployment MSR	Regional unemployment rate - ABS Unemployment rate for Major Statistical Region October of interview year	Number

Table A2 Means of model co-variates by employment disadvantage episode type

Variable	Unemployment Spell	Underemployment Spell	Marginal Attachment to Labour Force Spell	Comparison - Employed Spell
Spatial				
QLD/WA	0.32	0.31	0.30	0.32
NT/ACT	0.02	0.03	0.02	0.03
SA/TAS	0.13	0.13	0.14	0.12
Regional town	0.28	0.28	0.28	0.26
Rural	0.09	0.12	0.13	0.12
Individual				
Female	0.50	0.63	0.63	0.51
Under 25	0.46	0.43	0.44	0.33
Age 45_65	0.17	0.20	0.22	0.23
Degree	0.13	0.15	0.10	0.20
Secondary Ed	0.62	0.61	0.71	0.52
Health condition	0.16	0.12	0.22	0.10
English 2nd language	0.10	0.09	0.12	0.09
Aboriginal	0.05	0.03	0.05	0.03
Birth country non-English	0.12	0.11	0.13	0.10
History employment	8.79	10.51	8.60	13.03
History unemployment	1.39	0.81	0.90	0.63
History OSLM	2.41	2.69	4.82	2.35
Social Reproduction and the Labour Market				
Student	0.19	0.23	0.35	0.15
School leaver	0.11	0.10	0.06	0.07
Couple	0.40	0.44	0.41	0.55
Children in HHold	0.38	0.41	0.52	0.38
No of children	0.17	0.28	0.14	0.27
Father unemployed	0.16	0.12	0.15	0.12
Father employed	0.80	0.83	0.79	0.85
Mother employed	0.52	0.55	0.48	0.53
Social Embeddedness and Community				
Move 100km+	0.07	0.04	0.05	0.05
Move intention	0.31	0.26	0.21	0.26
Home owner	0.49	0.61	0.59	0.61
Community satisfaction	6.12	6.44	6.45	6.48
Neighbourhood satisfaction	7.48	7.69	7.69	7.79
SEIFA_SED3	0.37	0.32	0.37	0.29
State and Regulatory Effects				
Casual	0.33	0.67	0.11	0.30
Chances of good job	63.84	58.94	51.35	56.88
Retail	0.13	0.19	0.09	0.12
Accom & food	0.12	0.18	0.10	0.10

Manufacturing	0.10	0.05	0.05	0.10
Construction	0.06	0.04	0.03	0.07
Dissatisfied opportunities	0.27	0.16	0.30	0.12
Unemployment MSR	5.29	5.36	5.54	5.67
N	10,246	6,026	4,882	25,806