# Employment Retention and Re-entry among Older Women: Do Health and Caring Roles Matter?

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**Abstract:**
This paper analyses the probabilities of employment retention and re-entry by older workers, focusing on older women whose representation in the workforce is growing as the population ages but whose employment outcomes have been under-researched compared to older men. We find that older women are less likely than older men to retain employment or re-enter employment. Our regression results show that if health worsens or care hours increase, an older woman's chance of retaining employment falls. However, improvements in health and/or reductions in care roles do not increase the chances of an unwaged woman returning to work.

**Keywords:** older workers, employment, health, care effects, ageing, longitudinal studies

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## 1. Introduction

One of the key responses to the challenges of population ageing by OECD member states and other governments has been to introduce policies aimed at the mobilisation of all available labour resources, with the ultimate aim of building the tax base and contributing labour resources to the economic process. This 'labour supply' response features both policies directed towards an increased employment rate of those within the working age population, and policies aimed at extending working lives beyond conventional retirement ages (OECD, 2006: 9).

A large demographic group that is important to any labour supply response to population ageing is older women; that is, women who in the main have completed the period of their lives associated with intensive childrearing. This group currently comprises a large share of the pool of non-employed labour involving largely women who had quit employment during younger age and, after completing their intensive childrearing years, have failed to re-enter into paid work. These women are a logical target of policies aimed at increasing employment rates. For example, in Australia in 2006, women aged 40-64 accounted for over 40 per cent of the population aged 25-64 that was not involved in paid work. By contrast men within this age group accounted for only 25.1 per cent of the non-employed 'pool' (ABS, 2006)[1].

However, to date, the employment experiences and choices of older women have been poorly represented in literature and policy development work on issues relevant to population ageing. As Karsten Hank (2004: 190) commented, "we know only relatively little about the work and retirement patterns of mothers in their later years". Currie and Madrian (1999: 3353) made a similar observation when they noted that "a glaring limitation of the existing literature is the intense focus on elderly white men, to the virtual exclusion of most other groups".

Part of the gap in the current knowledge base on the employment experiences of older women is due to a lack of relevant empirical data. Many important surveys of employment experiences either don't include older women[2], or they have such poor representations of these women that small cell sizes quickly become a problem. Incredibly, a major US survey of older workers didn't actually survey women but instead asked women's husbands to describe their working patterns![3]

Given these data limitations, it is not all that surprising that when older women have been included in studies of labour supply they have, most often, not been the *focus* of enquiry. In some instances they have been identified as a particular demographic group in a more general study of women's labour market experiences (see Birch, 2005 for an overview of this large literature); in other instances they have been included as a particular group in a

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[1] Non-employed persons comprise those who are either unemployed or not in the labour force.

[2] Australia's 'Negotiating the Life Course Survey data is an example. It excluded women over the age of 55.

[3] Blau (1998: 597-8) describes how the US Retirement History Survey excluded married women and relied instead on information supplied by the married male respondents.

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general study of older worker's employment (examples include Cai and Kalb, 2004 and 2006; Berger and Messer Pelkowski, 2004; Campolieti, 2001; Chan and Huff Steven, 2001; Clark, York and Anker, 1999; Peracchi and Welch, 1994). However, only a small number of empirical projects have made older women and their particular life circumstances the focus of modelling and analysis. Cross-sectional studies which do focus specifically on this group of women include Evans and Kelley (2002), and Hill (2002). Longitudinal investigations, which are more relevant to the current paper, are limited to Pavalko and Artis' (1997) study of the employment transitions of US women in late midlife, Henz's (2004) examination of the effects of informal care obligations on labour force participation; Hanks' (2004) study of the links between German women's reproductive histories and their late-life labour market behaviour; and SpieB and Schneider's (2003) study of the effects of care roles on hours of paid work performed by older women.

Our research project adds to this small, specific evidence base on the employment experiences of older women. In doing so our findings will inform the development of economic policies and models on population ageing that are directly relevant to the circumstances and needs of older women. In addition, our study makes four further contributions to the existing literature on older women's employment.

First, we exploit data on employment status collected in the Household Income and Labour Dynamics in Australia (HILDA) Survey to study the determinants of older women's employment retention and re-entry into paid work. HILDA is a multi-purpose longitudinal survey. Its substantial size (see below) and longitudinal nature helps overcome some of the data limitations that have affected previous studies of the paid work experiences of older women.

Second, we make use of the longitudinal nature of the HILDA survey to explicitly investigate whether factors which affect employment re-entry by older women differ from factors affecting employment retention. Hence, our study represents a significant improvement over cross-sectional studies, which traditionally do not permit differentiation between these two types of employment outcomes.

Third, we pay particular attention to the effect that changes in health status in this life stage have on women's ability to stay engaged in paid work; and on the impact that the often large care roles that older women undertake have on their employment chances. Many empirical studies (see, for example, Joshi, 1990, Baxter, 2005) have explored the consequences of the unpaid care roles associated with motherhood for women's employment and earnings chances[4]. However, the impact of these and other care roles on the employment opportunities of older women has been less fully explored. Similarly, as was noted in the previous section, many studies have explored the effects of deteriorating health on the labour market involvement of older men, but the effects of poor health on the employment chances of older women is less fully understood. In the project we also examine the role of job characteristics – such as full time employment and access to sick,

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[4] Also see Henz (2004) for an excellent discussion of the international literature on these care effects.

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recreational and other leave benefits – in determining women's ability to retain employment during older age.

Finally, we conduct analyses on all older women in the HILDA survey, and then specifically on partnered older women. Utilising information on older women's partners in the survey, we are able investigate how the probability of partnered older women retaining or re-entering employment are affected by their partners' employment transitions.

## 2. Data and Method

*2.1 Data Source*

This paper draws on the data from the first five waves of the HILDA survey. The survey, which is funded by the Australian government, began in 2001 with a probability based sample of Australian households. 15,127 individuals aged 15 and over, from 7,682 households, were interviewed in the first wave of the survey. In this group there were 2,051 women aged 40 to 64. This is the demographic group that we classify as older women.

HILDA provides comprehensive information on all the key labour market characteristics of the respondents, such as their labour force status (employed, unemployed, marginally attached to the labour force, unattached to the labour force), working hours patterns, the permanency of their employment contracts, occupation, labour market history, and so on. This data is also available for the respondent's partner, where appropriate. Demographic, social and family background characteristics are also comprehensively measured, with data, for example, on the age of the respondent and each of her children; her educational attainment; her marital status; and her proficiency in English.

Information on the health of the individual is derived from responses to questions on a self-completion questionnaire that comprised part of the HILDA survey. One of these questions asks: "*In general, would you say your health is excellent, very good, fair or poor?*" The information thus derived is used to compute something known as the Short Form 36 measure, which is a general measure of current health and wellbeing (Ware et al. 2002). Responses to another question on the self-completion questionnaire provide information on recent changes in health. This question asks whether a health condition[5] had developed in the last year, or if health was worse than a year ago[6]. Care roles, other than those associated with child care, are gauged from responses to a question that asks how much time the respondent spends caring for a disabled spouse or disabled adult

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[5] Interviewees were shown a card that identified examples of health conditions. These included limited use of fingers or arms, or problems with eye-sight that could not be corrected with glasses or contact lenses.
[6] Cai and Kalb (2004: 5) provide an overview of the debate on the use of self-assessed health variables in the measurement of health status. They conclude that "there are arguments for and against using self-assessed health." In justifying their own use of the variables they also note that "…the use of self-assessed health in estimating the effect of health on labour force participation is still popular in the literature."

relative, or caring for elderly parents or parents-in-law. The measure, based as it is on hours of care, can be used to provide an indication of changing care responsibilities[7].

The longitudinal nature of the HILDA data base allows us to examine how, across a large group of older women, the likelihood of retaining or re-entering employment is influenced by measurable changes in life circumstances, in particular changes in health or care roles. Cross-sectional studies, relying as they do on data collected at a single point of time, are much less able to ascertain the nature of the causal relationship between, for example, health and employment.

A common problem that afflicts longitudinal datasets is attrition. In the HILDA Survey, waves subsequent to wave 1 feature some attrition of participants, due to refusal, death, or problems in locating them. The HILDA Survey attrition rates for the overall sample in waves 2, 3, 4 and 5 are 13.2%, 9.6%, 8.4% and 6% respectively. A comparison of the attrition rates between the HILDA Survey and the British Household Panel Study (BHPS) indicates overall the HILDA experience has been in line with the BHPS experience. The HILDA attrition rates follow the BHPS rates relatively well in waves 2 and 3. It is two percentage points higher than the BHPS attrition rate wave 4, but 0.8 percentage points lower in wave 5 (MIAESR, 2005 and 2006).

Attrition rates in the HILDA Survey are also higher among those who are aged 15-24 years than among older persons (MIAESR, 2006). This indicates that the retention rate among our sample of women aged 40 years and over should be relatively high as compared to the younger age groups. Indeed, we find that among our sample of older women, the attrition rates for waves 2, 3, 4 and 5 are only 7.6%, 6.8%, 6% and 4.4% respectively. These are noticeably lower than the attrition rate for the overall sample in each wave.

*2.2 Modelling Probabilities of Employment Retention and Re-entry*

Employment retention and re-entry are measured via a comparison of the woman's labour force status in one wave with her labour force status in the subsequent wave within a 12 month period. If an older women remains in paid work between one wave and the next, then she has retained employment. If an older women makes a transition from non-employment to paid work, then she has re-entered employment.

We follow standard economic approaches to understanding paid employment outcomes by viewing these as being determined in large part by individual-specific cost and benefit factors. That is, we assume that, all other things constant, paid employment is more likely to occur for (and be sustained by) individuals who have greater labour market opportunities by virtue of their education, labour market experience, language skills, location and/or physical capability. We also assume that paid employment is less likely to occur for (or be sustained by) those individuals for whom the costs of engaging in paid

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[7] Wakabayashi and Donato (2005: 472-3) identify that raw change scores can suffer problems of low reliability and correlation with original observations. They thus emphasize the importance of controls for initial values.

work are relatively high due, for example, of their care obligations. Job attributes and labour market conditions are also assumed to affect employment opportunities and outcomes. Positive job characteristics, such as job security, are likely to increase the attractiveness of paid work. Business cycle changes generally affect the ability of individuals to retain or re-enter employment. This approach guided our selection of independent variables into regression models where we model the impact of measured characteristics of an older woman in wave $t$ on the probability of an employment outcome occurring by wave $t$+1. Our employment retention and re-entry models specifically exploit the longitudinal nature of the data to eliminate any endogeneity of our key variable of interest – health – as a result reverse causation. Specifically, the probability of employment retention or re-entry occurring between waves $t$ and $t$+1 are modelled on health variables that measure whether health has changed between waves $t$-1 and $t$.

We adopt the use of random effects probit regressions to model employment retention and re-entry. Our models are estimated on an unbalanced data panel, where we include all older women respondents available at each wave, not just those that consistently respond in all 5 waves. The process involved in formulating the models and arriving of estimates of, for example, the effects of deteriorating health on the likelihood that an older woman will make an employment gain, is quite complex. An important first step in the modelling process involves ensuring that the estimates of the key relationships are not affected by *selection bias*. Briefly, survey data suffers the important limitation that, quite often, the individuals who are providing information to the survey have particular characteristics that are not featured in the population as a whole. Thus, when survey data is used, in regression analysis for example, it can result in estimates of relationships that are not relevant to the experiences of the entire population. Our study provides a good example of this potential problem. In part of our analysis we model the determinants of the likelihood that an older woman will retain paid employment. The sample for this part of the study comprises those women who were employed in at least one of four years between 2001 and 2004. However, these women are likely to have characteristics that set them apart from other older women in the population as a whole. For example, as employed women, they are likely to be relatively well educated and have fewer children. Thus, it would be wrong to infer that the way these women respond to changes in their health, for example, will be the same as women in the population as a whole would if they were employed. In other words, any estimates of the relationships of interest, based on the sample data alone, would be biased or misleading. To correct for this problem we utilize a method pioneered by Heckman (see Heckman, 2000). This basically involves preceding the analysis of employment retention or re-entry with an analysis of the probability that a woman with particular characteristics will be represented in the sample. An initial stage probit is estimated for this purpose and from this a generalized residual is calculated. This residual is then included as a regressor in the employment retention and re-entry models to correct for the sample selection bias.

## 3. Descriptive Statistics

Table 1 compares the employment outcomes of older women with those of their male counterparts, that is, older men aged 40-64 years. Of the, 2,573 (2,271)[8] older women (men) in the study, 60.9 per cent (60.7 per cent) were employed in the first wave that they were observed in. We pool the data from the different waves of the survey and then divide the sample into two: those engaged in paid work in each wave and those not in paid work. Among women in paid employment at some time during the study period, 3,140 employment retentions were recorded, representing 93.5 per cent of the employed sample. Among women not in paid work over the study period, an employment gain was recorded in 12.1 per cent of these cases. Employed older men are more likely to retain paid work and non-employed older men are more likely to re-enter paid work than their female counterparts.

**Table 1: Employment retention and re-entry into paid work by older women and men, 2001-2005**
**(a) Employment retention**

|  |  | Retained paid work | Left paid work |
| --- | --- | --- | --- |
| Employed older women | N | 3,140 | 217 |
|  | Row % | 93.5 | 6.5 |
| Employed older men | N | 4,392 | 216 |
|  | Row % | 95.3 | 4.7 |

**(b) Re-entry into paid work**

|  |  | Stayed out of paid work | Re-entered paid work |
| --- | --- | --- | --- |
| Non-employed older women | N | 1,980 | 272 |
|  | Row % | 87.9 | 12.1 |
| Non-employed older men | N | 1,131 | 207 |
|  | Row % | 84.5 | 15.5 |

*Source:* Authors' calculations from the HILDA Survey waves 1-5.

The descriptive statistics shown in Table 2(a) indicate partial correlations between employment retention and an older person's age, health, care roles, education and labour market experiences. For example, 91.4 per cent of the women who retained paid work in the study period assessed their health as good, very good or excellent, whilst a lower percentage (82.9 per cent) of the women who left paid work had this health status. This difference was statistically significant at the 1 per cent level. Only 7.0 per cent of the women who retained paid work reported care hours, while a higher percentage (9.2 per cent) of the women who left paid work reported positive care hours, though this difference was not statistically different. Similar differences can be observed between older men who retained paid work and those who left. However, older men who retained paid work were significantly more likely than men who left work to be partnered, while the proportion of women partnered does not differ significant between those who retained employment and those who left. Older women who retained paid work were significantly less likely to have poor English proficiency than those who left work, while the average English proficiency levels were similar between older men who retained and left work.

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[8] This number includes new entrants to the HILDA survey in waves 2-4.

The descriptive statistics shown in Table 2(b) describe possible correlations between employment re-entry and an older person's characteristics. 67.8 per cent of the women who stayed out of paid work had good, very good or excellent health, whilst a significantly higher percentage (79.0 per cent) of the women who gained paid work had this health status. 8.5 per cent of the women who stayed out of paid work reported care hours, compared to a lower percentage (7.4 per cent) of the women who gained paid work, though this difference was not statistically different. Once again, poor English proficiency was significantly more prevalent among older women who stayed out of paid work than women who re-enter work, and among older men, the proportion partnered is significantly higher among those who gained paid work than those who remained out of work.

The estimates reported in table 2 still leave open the question of whether, for example, the apparent relationship between health and employment persists for older women once we control for age and other factors. In order to address this issue for older women, the following section presents results of the employment probabilities of older women, using an initial employment probit model, followed separate random effects probit models of employment retention and re-entry.

**Table 2: Characteristics older women and men, 2001-2005 by employment transition**
**(a) Employment retention**

| | Older women | | Older men | |
|---|---|---|---|---|
| | Retained paid work | Left paid work | Retained paid work | Left paid work |
| Age (average years) | 49.2*** | 52.2 | 49.8*** | 54.1 |
| Partnered (per cent) | 70.4 | 70.0 | 84.1*** | 75.5 |
| Major city (per cent) | 63.7 | 59.9 | 60.3* | 53.7 |
| Number of children aged 0-12 (average) | 0.4** | 0.3 | 0.6*** | 0.2 |
| Health good, very good or excellent (per cent) | 91.4*** | 82.9 | 89.2*** | 76.4 |
| Caring hours (weekly average) | 0.4 | 0.5 | 0.2 | 0.5 |
| Carer (per cent) | 7.0 | 9.2 | 2.9 | 5.1 |
| Is able to speak English less than 'very well' (per cent) | 1.8** | 4.6 | 2.7 | 2.8 |
| Highest educational qualification | | | | |
| -Year 11 or below (per cent) | 33.9 | 38.2 | 24.1 | 29.2 |
| -Bachelor degree or higher (per cent) | 30.4** | 23.5 | 26.1** | 19.4 |
| -Other post-school (per cent) | 24.5 | 25.8 | 41.7 | 41.7 |
| -Year 12 (per cent) | 11.2 | 12.4 | 8.2 | 9.7 |
| Time not worked as a percentage of time since left full-time education | 20.7*** | 26.1 | 4.9** | 6.4 |

**(b) Employment re-entry**

| | Older women | | Older men | |
|---|---|---|---|---|
| | Stayed out of paid work | Gained paid work | Stayed out of paid work | Gained paid work |
| Age (average years) | 54.2*** | 49.1 | 56.1*** | 51.0 |
| Partnered (per cent) | 74.0 | 76.1 | 62.0*** | 77.3 |
| Major city (per cent) | 56.3 | 55.5 | 50.4 | 50.7 |
| Number of children aged 0-12 (average) | 0.3*** | 0.6 | 0.2*** | 0.5 |
| Health good, very good or excellent (per cent) | 67.8*** | 79.0 | 48.6*** | 77.2 |
| Caring hours (weekly average) | 1.3*** | 0.3 | 1.6*** | 0.1 |
| Carer (per cent) | 8.5 | 7.4 | 5.4 | 3.9 |
| Is able to speak English less than 'very well' (per cent) | 6.5* | 4.0 | 6.5 | 4.3 |
| Highest educational qualification | | | | |
| -Year 11 or below (per cent) | 59.1*** | 42.3 | 40.1** | 31.4 |
| -Bachelor degree or higher (per cent) | 9.9*** | 21.3 | 11.1** | 18.4 |
| -Other post-school (per cent) | 20.0 | 24.3 | 41.8 | 42.5 |
| -Year 12 (per cent) | 11.0 | 12.1 | 7.1 | 7.7 |
| Time not worked as a percentage of time since left full-time education | 50.8*** | 34.7 | 20.5*** | 14.0 |

*Source:* Authors' calculations from the HILDA Survey waves 1-5.
*Notes:*
In part (a), ***denotes significantly different from those who left paid work at the 1% level; **denotes significantly different from those who left paid work the 5%; * denotes significantly different from those who left paid work the at the 10% level.
In part (b), ***denotes significantly different from those who gained paid work at the 1% level; **denotes significantly different from those who gained paid work the 5%; * denotes significantly different from those who gained paid work the at the 10% level.

## 4. Results

*4.1 Initial Employment Probabilities*

Regressions for each employment status model the probability of an older woman being employed in the year that she is first observed in the HILDA data as a function of the characteristics in Table 2 at their initial observation. The results of these analyses are reported in Table 3. Although these results were primarily generated to help us to control for selection bias in our study of employment retention and re-entry – and to address possible endogeneity in our measure of health status[9], they are reported here as they also provide useful insights to the factors affecting women's employment chances after the age of 40. The importance of health and care roles in determining these chances is clear: At mean values for the various explanatory variables, women with good, very good or excellent health are 30.7 percentage points more likely to be in paid employment than women with fair, poor or very poor health. These results are consistent with those reported by Cai and Kalb (2006) who, in a detailed study of the effects on labour force participation, identified that the probability of labour force participation for a 50-60 year old Australian woman was 25.3 per cent less if she was in poor, as compared to excellent health.

Each additional hour per week engaged in caring for a disabled spouse or relative, or an elderly parent, reduces the probability of employment by 0.9 percentage points. If this relationship is linear, 30 additional hours of this type of care would reduce the employment probability by 27 percentage points. Several other studies have produced similar results. For example, McLanahan and Monson (1990) found that care giving lowered married women's chances of being employed, and Wakabayashi and Donato (2005) found that the paid work hours of women aged 46 years and older were substantially lower (by approximately 10 hours per week) when they were engaged in a caring role. However, it is also important to note that some other studies have reported opposite findings. For example, Wolf and Soldo (1994) reported that the provision of care to elderly parents did not affect the paid working hours of married daughters.

Some further important determinants of the employment chances of older women are also apparent from the figures in Table 3. As women age, the likelihood that they will be employed falls – on average by 2.4 percentage points each year. A lack of proficiency in English strongly reduces the employment likelihood. Women with an ability to speak English very well have a 27.1 percentage point lower chance of being employed than their English-speaking counterparts. Education also plays a crucial role in determining whether older women are employed. Degree holders are recorded here as being 15.7 percentage points more likely to be employed than their counterparts who did not

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[9] In this context, endogeneity refers to the possibility that health may be determined by, as well as a determinant of, a woman's engagement in paid work. As Cai and Kalb (2006: 243) observe this problem may be more significant when self-assessed health is used in models of health effects as a respondent may overstate their health problems to justify their non-involvement in paid work. By focusing on employment transitions we minimize this problem by separating our observation of health and labour force status. We also control for initial health status.

complete high school. Finally, prior experience in the labour market is an important predictor of employment during older age. The results shown here indicate that as the proportion of time not in paid work since the completion of full time education increases by one percentage point, the employment probability during older age decreases by 0.8 percentage points. Decreasing the proportion of time not in paid work from 32.5 per cent (the sample mean) to 16 per cent would, assuming a linear relationship holds, reduce the employment probability by 12.8 percentage points.

**Table 3: Estimated Marginal Effects on Initial Employment Probability: Older Women, 2001-2005**

|  | Marginal effect | Standard error |
|---|---|---|
| Age (years) | -0.024*** | 0.005 |
| Partnered | -0.020 | 0.069 |
| Major city | -0.013 | 0.061 |
| Number of children aged 0-12 | -0.123*** | 0.039 |
| Health good, very good or excellent | 0.305*** | 0.080 |
| Whether caring for spouse/relative | -0.009*** | 0.005 |
| Is able to speak English less than 'very well' | -0.271*** | 0.160 |
| Bachelor degree or higher educational qualification | 0.157*** | 0.083 |
| Other post school educational qualification | 0.056** | 0.075 |
| Year 12 educational qualification | 0.048 | 0.095 |
| Time not worked as a proportion of time since left full-time education | -0.008*** | 0.001 |
| Initial observation in Wave 2 | -0.077* | 0.111 |
| Initial observation in Wave 3 | -0.027 | 0.119 |
| Initial observation in Wave 4 | -0.134*** | 0.124 |
| Constant | 3.693 | 0.285 |

*Source:* Authors' calculations from the HILDA Survey waves 1-5.
*Notes:* The default categories are Wave 1; not partnered; living in a non-metropolitan area; health very poor, poor or fair; zero care hours; speaks English 'very well'; educational qualification is Year 11 or below. Marginal effects measure the extent to which changes in the value of each explanatory variable affect the probability that a woman will be employed in first wave that she is observed. Marginal effects are calculated at the sample means.***denotes significant at the 1% level; **denotes significant at the 5%; *significant at the 10% level. Sample: 2,573. LR Chi$^2$ (14): 1,003***

*4.2 Employment Retention and Re-entry*

The results on employment retention and employment re-entry presented in the following Tables 4 and 5 respectively, address the uncertainty about the causal nature of these relationships. They show the effects that, for example, a measured change in a care role at a particular survey date has on the probability that an older woman will make retain employment or make an employment gain by the next survey date – that is within the next 12 months. The regression models used in this part of the study also take account of the particular characteristics of the samples of employed and non-employed older women described in the preceding paragraph. They thus provide unbiased estimates of the effects of changing health, care roles, and a range of other factors, on the likelihood of employment retention or re-entry by older women. Results are shown separately for all women in our samples, and for the sub-set of partnered women. A range of additional measurable factors – such as those relating to changes in spouse employment – will impact on a partnered woman's employment incentives and opportunities. By considering

this group of women separately, we are able to ascertain the size and importance of these effects.

Deterioration in health is shown to have detrimental effects on an older woman's chances of retaining employment, and on her ability to return to paid work. The data in column 2 and 4 of Table 4 indicate that older women who developed a health condition were 2.5 percentage points less likely to retain paid employment than other women in the following year. That is, holding all other variables constant at their means, the probability of retaining employment would fall from 93.5 to 91 per cent. In the sample of partnered women this effect was larger – at 3.8 percentage points, possible indicating that, for some women, having a partner creates the opportunity to leave paid work after becoming ill. The data in column 2 and 4 of Table 5 show that, across all women, deteriorations in health are also associated with a 2.1 percentage point reduction in the chances of re-entering employment, though these effects were smaller and not significantly significant in the sample of partnered women. These findings add to those of Cai and Kalb (2006) who identified that older women with poor health had substantially lower chances of employment than women with excellent health. Given the longitudinal dimension of our analysis, our results show that deterioration in health in an older woman reduces her opportunity to retain paid work and these effects are largest for women who are partnered.

The effects of changes in health status are not symmetric. That is, whilst deteriorating health harms older women's employment chances, health improvements are not significant sources of difference in these chances. This carries the implication that organizational and government programs targeting employment rates are likely to be most effective when resources/interventions are directed towards women encountering health problems, rather than towards general programs aimed at improving women's health.

Increasing care obligations appear to create a similar pattern of effects on older women's employment chances. The figure on the 'change in care hours' variable in column 2, Table 4 indicates that, across all women, when the hours spent caring for a sick spouse or elderly parent increase by 30 hours per week, the probability of a woman retaining her employment in the following year falls by approximately 3 percentage points. This effect is similar within the sub-group of partnered women and is indicative of the difficulties that many women report in maintaining their employment in the presence of these caring roles (see Henz, 2004, for an overview of international literature and Taskforce on Care Costs, 2005, for details of specific Australian evidence). The results are also in accord with those of Pavaloko and Artis (1997) who reported that women are more likely to reduce their working hours or leave the labour force if they commence a care role in older age. As such the findings reported here contribute further information on the immediate economic costs imposed on carers of disabled and elderly community members (see AMP-Natsem, 2006, for recent Australian data).

Data on the possible long term impacts of care roles is contained in column 2, Table 5 figures indicating that reductions in care hours do not have an observable impact on

women's chances of returning work midlife. This finding is also in line with Pavaloko and Artis (1997) SpeiB and Schneider (2003) who both find that terminating caregiving does not increase the working hours of older women. Importantly, it carries the implication that women who have previously had high care responsibilities do not find that their chances of returning to paid work are enhanced when these obligations fall.

The results presented in Tables 4 and 5 also show that older women have substantial care obligations associated with their own children – and that these roles continue to have large impacts their employment chances into older age. Having a child reduces the probability of retaining paid employment by around 44 percentage points (47.5 percentage points in the sub-sample of partnered women). However, as children grow older, their older mothers do not appear to quickly return to work. The figures in column 2, Table 5 show that non-employed women who record a decrease in the number of children aged under 12 years of age are no more or less likely to move into paid employment than other women. Thus, from this data, it appears that whilst new-motherhood tips many women out of paid work, the effect of reductions in these particular care roles on the chances of returning to paid work is small in older age.

The importance of women's family context to her employment opportunities and choices is also reflected in other parts of the results in Tables 4 and 5. First, the data show the important way in which the employment actions of many older women are affected by their partner's employment. Across the group of partnered women, the likelihood of retaining a job is 8 percentage points lower for women whose partner leaves employment or is already not working than for women whose partner stays employed within a 12 month period. Women with partners who either leave employment or remain out of work for a whole year are also less likely (by approximately 1.1 and 3.6 percentage points respectively) to gain employment than women with partners who stayed in paid employment. This result is consistent with other studies that have pointed to the coordination of retirement decisions of older couples (see especially Blau, 1998).

Our results also indicate that changes to women's partnered status impacts on their employment chances. Losing a partner reduces the chances that a woman will retain paid work within the next 12 months by 7.3 percentage points. Interestingly, gaining a partner also reduces these chances – by 10.1 percentage points. One possible explanation for this pattern is that many women continue to make their employment decisions in the context of their partner's employment and income. Thus, changes in partnered status may create a need for some women to re-evaluate their own involvement in paid work.

The measured effects of changes in women's care roles and health on their employment retention probabilities are of a comparable magnitude to the effects of some other, more commonly recognized determinants of employment during older age. For example, the results in column 2 of Table 4 show that, with each additional year of age beyond the age of 40, the chance that a woman will retain paid work decreases by 0.4 percentage points (the effect is 0.3 percentage points for partnered women). The data in Table 4 indicates that an additional year of age reduces the probability that a woman will re-enter paid employment by 0.6 percentage points (the effect for partnered women in 0.2 percentage

points). These particular results are both intuitive and consistent with the findings of a range of studies on female labour force participation rates and retirement patterns (see Warren, 2006, for an overview).

Job characteristics also play a role in determining the likelihood that older women will remain employed. Workers employed under permanent – as opposed to casual - employment contracts have statutory rights to sick leave and recreational leave benefits. Sick leave is often used by parents to enable them to care for a sick child (see ABS, 1996). Our results (Table 4, column 2) show that women with access to these benefits are 2.4 percentage points more likely to retain employment than women employed on casual contracts – where paid sick and recreational leave is typically not available. The measured effect is virtually the same in the sample of partnered women – at 2.3 percentage points.

Flexible working hours (that is, the ability to vary start and finish time) are often cited as a job characteristic that should help women accomplish their paid and unpaid roles (see Lewis, 1997). However, our analysis of the HILDA data did not identify this working condition as a statistically significant determinant of the probability that an older woman would remain in employment. Working a day – as opposed to a night – shift was also not identified as a significant determinant of this probability. This finding is more in line with those of Scharlach, Sobel and Roberts (1991) who identify the personal circumstances of caregivers as more important determinants of continued employment. However, job satisfaction, which is likely to reflect the suitability of working time arrangements, was measured as significant. As shown in Table 4 (column 2), when an older woman's ranking of her job satisfaction increases by 1 within a scale of 0 to10, this raises the probability that she will remain in paid work by 0.7 percentage points.

Education, language proficiency and labour market experience could all be expected to play a role in determining the likelihood of employment chances in older age. Standard models of employment and earnings all emphasise these factors in the composition of human capital (Becker, 1964) and the results in Tables 4 and 5 are in accordance. Briefly they show that women working in managerial and professional roles (most likely requiring high educational qualifications) are more likely to retain paid work than women in intermediate or elementary clerical and other roles (most often requiring low qualifications). Older women with a bachelor degree or higher qualification are also more likely to return to work than women who didn't complete high school. An important implication of these results is that, as successive generations of women with higher educational qualifications move into older age, employment rates within this key demographic group are likely to rise. Women who cannot speak English very well are less likely to retain paid work in older age than other women and they are also less likely to return to paid work (although this effect was small and not statistically significant in the sub-set of partnered women). Time spent out of paid work diminishes their likelihood of remaining in paid work and reduces the probability of returning to work. Furthermore, women who identify themselves as marginally (as opposed to unattached) to the labour force are more likely to subsequently re-enter paid work. Not surprisingly, women who

are actively looking for paid work are the ones most likely to subsequently re-enter the workforce.

To complete this summary of the data in Tables 4 and 5, it can be noted that the general availability of economic opportunities influences employment rates. The period of our study (2001-2005) was characterized by strong economic and employment growth in Australia. The influence of this on the likelihood of older women retaining or re-entering paid work is apparent in marginal effects on the 'wave' variables in the tables. Women who were employed in 2004 (wave 4), when economic conditions were most favourable, were more likely to remain in paid work than their counterparts who were employed in 2001 (wave 1). Likewise, women who were not engaged in paid work in 2004 (wave 4) were more likely to move into paid employment than their non-employed counterparts in 2001. However, although economic opportunities vary across metropolitan and rural areas within Australia, the employment chances of older women living in cities (where job prospects are typically better) are little different from their counterparts in rural areas[10].

**Table 4: Estimated Marginal Effects on the Probability of Retaining Employment: Older Women, 2001-2005**

| Explanatory variables | All women | | Partnered women | |
|---|---|---|---|---|
| | Marginal effect | Standard error | Marginal effect | Standard error |
| Wave (wave 1 is default) | | | | |
| -Wave 2 | 0.009 | 0.111 | 0.007 | 0.149 |
| -Wave 3 | 0.008 | 0.112 | 0.01 | 0.153 |
| -Wave 4 | 0.015** | 0.116 | 0.013** | 0.154 |
| Age | -0.004*** | 0.01 | -0.003*** | 0.015 |
| Change in partnered status (remained partnered is default) | | | | |
| -Remained single | 0.002 | 0.099 | | |
| -Lost partner between waves | -0.073*** | 0.255 | -0.239 | 1.145 |
| -Gained partner between waves | -0.101*** | 0.309 | | |
| Major city | 0.006 | 0.091 | -0.003 | 0.123 |
| Change in number of children aged 0-12 between waves (remained zero is default) | | | | |
| -Increased | -0.442*** | 0.453 | -0.475*** | 0.683 |
| -Decreased | -0.009 | 0.19 | -0.02 | 0.231 |
| -Remained the same and more than zero | -0.009 | 0.141 | 0.005 | 0.206 |
| Change in health (no change in health is default) | | | | |
| -Health worse than a year ago or developed condition in last year | -0.025*** | 0.116 | -0.038*** | 0.162 |
| -Health better than a year ago and did not | -0.002 | 0.118 | -0.007 | 0.159 |

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[10] The regional variable is our models is a binary variable that takes on a value of 1 if a women resides in major cities, and 0 otherwise. When we disaggregated this variable by separating non-major cities into inner regions, outer regions and remote regions, we found the difference among the effects of the inner, outer and remote regional variables to be generally insignificant. We also used the Bayesian Information Criterion to test the relative goodness-of-fit of the model with a without the detailed regional breakdown. The lower the information criterion, the better the fit of the model (Singer and Willett, 2003). We found that models with the detailed regional breakdown had higher information criterions. Hence, we have opted to retain the broad major city variable. We also investigated the effects of state variables as predictors in our models but found that in the case of all our models, the state variables were generally insignificant. The models with state variables had higher information criterions than the models without them. Hence, state variables have been excluded from our models.

| Explanatory variables | All women | | Partnered women | |
|---|---|---|---|---|
| | Marginal effect | Standard error | Marginal effect | Standard error |
| develop a condition in last year | | | | |
| Change in care hours | -0.001*** | 0.007 | -0.001* | 0.011 |
| Is able to speak English less than 'very well' | -0.065** | 0.259 | -0.048* | 0.317 |
| Years not worked (time since left full-time education expressed as a fraction of 1) | -0.041*** | 0.232 | -0.029** | 0.313 |
| Occupation (intermediate clerical and below is default) *(d)* | | | | |
| -Manager/professional | 0.022** | 0.109 | 0.016*** | 0.146 |
| -Associate professional; trade or advanced clerical | 0.009 | 0.114 | 0.011 | 0.163 |
| Working Full time | 0.015*** | 0.097 | 0.008 | 0.133 |
| Permanent contract | 0.024*** | 0.095 | 0.023* | 0.13 |
| Job satisfaction level | 0.007*** | 0.022 | 0.004** | 0.031 |
| Flexible start or finish times | 0.005 | 0.087 | 0.004 | 0.117 |
| Day shift | 0.000 | 0.097 | -0.002 | 0.134 |
| Change in partner's health (no change in health is default) | | | | |
| -Health worse than a year ago or developed condition in last year | | | 0.003 | 0.177 |
| -Health better than a year ago and did not develop a condition in last year | | | 0.003 | 0.18 |
| Partner's employment transition (remained employed is default ) | | | | |
| -Moved into employment | | | -0.013 | 0.326 |
| -Moved out of employment | | | -0.08*** | 0.227 |
| -Remained not employed | | | -0.083*** | 0.225 |
| Generalised residual | 0.025*** | 0.085 | 0.024*** | 0.124 |
| Constant | 3.795*** | 0.566 | 4.134*** | 0.875 |
| $\ln(\sigma_v^2)$ | -1.099 | 0.626 | -1.020 | 0.963 |
| $\sigma_v$ | 0.577 | 0.181 | 0.600 | 0.289 |
| Rho ($\rho$) | 0.250 | 0.117 | 0.265 | 0.187 |
| *Diagnostics* | | | | |
| Sample | 3,694 | | 2,211 | |
| Groups | 1,523 | | 969 | |
| Wald chi2(24;27) | 98.88*** | | 48.76*** | |

*Source:* Authors' calculations from the HILDA Survey waves 1-5.

*Notes:* $\ln(\sigma_v^2)$ is the log of variance or the panel-level variance component. $\sigma_v$ is the standard deviation. Rho ($\rho$) is the proportion of the total variance contributed by the panel-level variance component, that is, $\rho = \sigma_v^2/(\sigma_v^2 +1)$. ***denotes significant at the 1% level; **denotes significant at the 5%; *significant at the 10% level.

**Table 5: Estimated Marginal Effects on the Probability of Re-entering Employment: Older Women, 2001-2005**

| Explanatory variables | All women | | Partnered women | |
|---|---|---|---|---|
| | Marginal effect | Standard error | Marginal effect | Standard error |
| Wave (wave 1 is default) | | | | |
| -Wave 2 | 0.009 | 0.129 | 0.015* | 0.21 |
| -Wave 3 | 0.001 | 0.139 | 0.02* | 0.247 |
| -Wave 4 | 0.037*** | 0.137 | 0.037*** | 0.257 |
| Age | -0.006*** | 0.01 | -0.002*** | 0.018 |
| Change in partnered status (remained partnered is default) | | | | |
| -Remained single | -0.025*** | 0.126 | | |

| | | | | |
|---|---|---|---|---|
| -Lost partner between waves | -0.011 | 0.294 | 0.016 | 1.228 |
| -Gained partner between waves | -0.015 | 0.447 | | |
| Major city | -0.013** | 0.106 | -0.012** | 0.19 |
| Change in number of children aged 0-12 between waves (remained zero is default) | | | | |
| -Increased | -0.043 | 4716.1 | -0.013 | 4013.339 |
| -Decreased | 0.014 | 0.193 | 0.008 | 0.305 |
| -Remained the same and more than zero | 0.008 | 0.154 | -0.002 | 0.273 |
| Change in health (no change in health is default) | | | | |
| -Health worse than a year ago or developed condition in last year | -0.021*** | 0.124 | -0.004 | 0.2 |
| -Health better than a year ago and did not develop a condition in last year | -0.012 | 0.129 | -0.006 | 0.209 |
| Change in care hours | -0.001 | 0.004 | 0 | 0.006 |
| Is able to speak English less than 'very well' | -0.03** | 0.248 | -0.007 | 0.388 |
| Years not worked (time since left FT education expressed as a fraction of 1) | -0.002*** | 0.002 | -0.001*** | 0.005 |
| Education (year 11 or below is default) | | | | |
| -Bachelor degree or higher | 0.076*** | 0.159 | 0.022 | 0.294 |
| -Other post-school qualifications | 0.011 | 0.131 | 0.001 | 0.227 |
| -Year 12 | 0.007 | 0.166 | -0.006 | 0.284 |
| Non-employment status (not in Labour Force, unattached to the labour force is default) | | | | |
| -Unemployed, looking for FT work | 0.315*** | 0.218 | 0.131*** | 0.412 |
| -Unemployed, looking for PT work | 0.18*** | 0.232 | 0.16*** | 0.367 |
| -Not in labour force, marginally attached to labour force | 0.059*** | 0.11 | 0.031*** | 0.18 |
| Change in partner's health (no change in health is default) | | | | |
| -Health worse than a year ago or developed condition in last year | | | -0.004 | 0.219 |
| -Health better than a year ago and did not develop a condition in last year | | | 0.004 | 0.232 |
| Change in partner's health (no change in health is default) | | | | |
| -Health worse than a year ago or developed condition in last year | | | -0.008 | 0.385 |
| -Health better than a year ago and did not develop a condition in last year | | | -0.011* | 0.386 |
| Partner's employment transition (remained employed is default ) | | | | |
| -Moved into employment | | | -0.008 | 0.385 |
| -Moved out of employment | | | -0.011* | 0.386 |
| - Remained not employed | | | -0.036*** | 0.271 |
| Generalised residual | 0.021*** | 0.082 | 0.005 | 0.142 |
| Constant | 2.724*** | 0.53 | 2.42*** | 0.9 |
| $\ln(\sigma_\upsilon^2)$ | -0.414 | 0.339 | 0.677 | 0.377 |
| $\sigma_\upsilon$ | 0.813 | 0.138 | 1.403 | 0.265 |
| Rho ($\rho$) | 0.398 | 0.081 | 0.663 | 0.084 |
| *Diagnostics* | | | | |
| Sample | 2,559 | | 1,672 | |
| Groups | 1,116 | | 750 | |
| Wald chi2(23; 26) | 153.73*** | | 69.77*** | |

*Source:* Authors' calculations from the HILDA Survey waves 1-5.

*Notes:* $\ln(\sigma_\upsilon^2)$ is the log of variance or the panel-level variance component. $\sigma_\upsilon$ is the standard deviation.

Rho ($\rho$) is the proportion of the total variance contributed by the panel-level variance component, that is, $\rho = \sigma_\upsilon^2/(\sigma_\upsilon^2 + 1)$. ***denotes significant at the 1% level; **denotes significant at the 5%; *significant at the 10% level.

## 5. Conclusion

The analysis in this paper provides important information on factors influencing the labour supply of older women. This is a group that will become increasingly important to labour market and broader economic outcomes as population ageing continues and as pressure on labour resources grows. The results we derive from our analysis of employment retention and employment re-entry make it possible to identify the causal influences of health, care and other factors on the labour force retention and attraction of older women. This is a substantial addition to the current literature on labour supply as it focuses attention on the particular circumstances and needs of older women, and as it addresses the limitations of cross-sectional studies of employment.

It is also not surprising that we find poor health and/or large care roles to have a negative impact on employment chances. However, our study provides new information on the effects of changing health and care roles on the employment chances of older women. For example, we show that women with excellent, very good or good health are approximately 30 percentage points more likely to be employed in older age than women with a less favourable health status. We also show that if health worsens in older age a woman's chance of retaining paid work within a 12 month period falls by approximately 3 percentage points. Women who report that they spend time caring for an elderly parent or disabled family member have substantially lower chances of remaining in paid work than other women. When these care hours increase the probability of retaining paid work also falls; by about 0.1 percentage point for each additional hour of care each week. Women who have a child in late midlife experience a substantial – approximately 44 percentage point - reduction in their chances of retaining employment.

A more surprising result is the lack of symmetry in these health and care effects. That is, although deteriorating health and/or larger care roles both reduce the likelihood that an older woman will retain paid work, improvements in health and/or reductions in care roles do not appear to increase the chances of re-entering paid work. This is an important result as it points to substantial long-term employment and earnings consequences for older women if they experience poor health and/or they undertake large care roles.

Another important result of our study is the finding of significant positive effects on employment retention from the provision of sick and recreational leave benefits. Women with access to these benefits are 2.4 percentage points less likely to leave paid employment within a given 12 month period than women employed under alternative arrangements. Job satisfaction ratings are also an important predictor of the likelihood that an older woman will remain in paid employment. Both results imply that a woman's ability to retain in paid work – especially in the context of large care roles – is likely to be affected by her entitlement to have her family needs considered in her employment relationship. As additional waves of the HILDA data become available (and thus the sample of older women increases) it should become possible to ascertain if these effects are particularly important when interacted with women's changing care roles and/or changing health circumstances.

The results presented in this paper helps identify a 'business case' for programs aimed at improving women's health outcomes, as a clear spin-off of these programs is an increased retention of women in paid work. The evidence on health effects should also challenge managers and others to ask whether the strong relationship between health and retention can be altered, for example, by ensuring that workers can maintain their employment by altering their working-time arrangements and/or by accessing leave if they are confronted with a health problem. Other results presented in this paper support this conclusion as they show that the availability of sick leave and access to flexible working arrangement are important determinants of an older women's ability to remain engaged in paid work. Our findings on the impacts of care roles also point to similar conclusions about the business and economic case for easing the conflicts between life circumstances and employment chances. Supporting the findings of several other studies in this area (see, for example, Scharlach, Sobel and Roberts, 1991), our findings indicate that the availability of supportive organisational cultures, leave provisions and affordable and high quality care options are all likely to reduce these impacts and, thus, promote the retention of women in employment.

Together the results presented in this paper reveal a tension between the different labour market policies of neo-liberal policy regimes, such as the one which has characterised Australian policy-making in recent decade. Wedded to economic growth, these regimes are typically committed to achieving a labour supply response to population ageing. However, they also hold strongly to the notion that employment benefits should be the subject of direct bargaining between individual employers and employees. Thus, measures to lift employment rates (such as reduced access to pensions) have often been introduced at the same time as 'pro-competitive' measures have reduced the regulated leave entitlements of many workers. There has also been a reluctance to commit to the provision of high quality child and elder care facilities. We identify this conflict as inimical to the development of a labour supply response to population ageing that is suitable to the needs and circumstances of older women.

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