JOB INSECURITY AND MENTAL HEALTH OUTCOMES: AN ANALYSIS USING WAVES 1 AND 2 OF HILDA

Marc L. Adam and Paul Flatau
Department of Economics
Murdoch University

Australian Social Policy Conference
20-22 July, 2005
Social Policy Research Centre
University of New South Wales

Abstract
Recent shifts in the nature and organisation of work have generated a secular rise in job insecurity among Australian workers. Despite this, the issue of job insecurity and its impact on peoples’ sense of well-being remains an under-researched topic. The objective of this paper is to utilise the HILDA dataset to show how job insecurity impacts on mental health outcomes. An important feature of the HILDA survey is that enables an examination of both the contemporaneous impact of job insecurity on mental health outcomes but how changes over a one year time period may impact on mental health outcomes. A fixed effects panel regression model is used to test the association between changes to job security and corresponding changes to mental health. The results suggest strong empirical connection exists between job security and mental health.

Address for Correspondence:
Paul Flatau
Economics, MBS
Murdoch University
MURDOCH WA 6150
p.flatau@murdoch.edu.au
1 Introduction

There have been few attempts to quantify the link between job security/insecurity and workers’ mental health outcomes in Australia. The existing literature on the nexus between labour markets and mental health outcomes has focused on the question of the negative effects that unemployment has on individual’s physical and mental health outcomes (Morrell, Taylor and Quine, 1994; Mathurs and Schofield, 1998; Hammarstrom, 1994; Morrell, Taylor and Kerr, 1998; Beale and Nethercott, 1987; Kennedy, 2003; Clarke and Oswald, 1994; Flatau, Galea and Petridis, 2000; and Theodossiou, 1998). The unsurprising conclusion that these studies come to is that unemployment adversely impacts on mental health outcomes.

What remains to be determined, however, is the relative impact that the security or lack of it in the retention of one’s job may have on mental health outcomes. This is the central point of focus of the present paper. Job insecurity involves fundamental and involuntary changes regarding the safety and continuity of an individual’s employment. In other words, job insecurity involves perceived uncertainty concerning the continuation of employment or features of the job (Hellgren, et al. 2000). The OECD (1997) defines job insecurity in terms of the expected pecuniary and non-pecuniary loss incurred when a job is lost.

The effect of job security on mental health outcomes in Australia is examined using Housing, Income and Labour Dynamics in Australia (HILDA) Survey Waves 1 and 2. This survey includes two measures of job insecurity as well as mental health and wellbeing scales. Further, HILDA’s panel design allows for the examination of changes over time in labour market conditions and mental health outcomes. We shall examine the impact of job insecurity on mental health and well being outcomes using a simple cross section regression model, a differenced regression model and a fixed effects panel regression model. The latter model makes full use of the longitudinal feature of HILDA. The cross section models provide an analysis of the relationship between job security and mental health at a given point in time. They also allow the testing of stability of this relationship over time in separate cross-section regressions of Wave 1 and Wave 2. While it may be shown that a relationship exists on a cross section level, it is also necessary to test the relationship over time. The panel regression models allow us to test the association between changes to job security and corresponding changes to mental health outcomes.

The structure of the paper is as follows. In section 2 we provide a brief outline of the literature in relation to job insecurity and mental health and well-being impacts. Section 3 then describes the HILDA data and the job insecurity and mental health measures used in the empirical analysis. In section 4 we provide descriptive statistics results of the relationship between job insecurity and mental health. The modelling framework and regression results are presented in section 5.
2  Job Insecurity and Health-Related Outcomes

2.1  Organisational Psychology Perspectives on Work and Mental Health

There has been a long history of interest, largely in the organisational psychology literature, on the relationship between work and mental health outcomes. A number of different perspectives exist which shed some light on the potential impacts of job insecurity on the mental health outcomes of those affected. One such perspective is the control support model. Here, the key determinants of work-related mental health impacts (typically referred to as work stress in the literature) are the structural and organisational attributes of the organisation a worker is employed in. Weak social support and high job demands will also exacerbate strains at work (Karasek, 1979). Factors stressed in this tradition include the lack of control over decision making and low levels of skill utilisation which can flow into frustration and strain. The accumulated impact of unresolved strain may cause anxiety, depression, psychosomatic complaints on the part of those so affected as well as physical health outcomes such as cardiovascular disease.

When individuals experience severe emotional exhaustion due to work they are frequently referred to as being ‘burnt out’. Burnout theory basically argues that conflicts and tensions in the workplace may manifest themselves as psychological strains. Organisational characteristics play an important role in determining the burnout phase of individuals (Dollard and Winefield, 2002). Of relevance to the present analysis, a chronic downsizing environment may promote negative strains and ‘burnout’ among employees.

The Effort-Reward Imbalance model (ERI) (Siegrist, 1996, 1998) is another important perspective on the work-mental health nexus. It focuses attention on the social framework of employment. Workers provide effort to employers with an expectation that they will receive adequate rewards in return. If a worker does not receive the reward expected or perceived as being deserved then work-related strain results. Reward includes recognition and social status as well as monetary benefits. A negative change in recognition can induce work-related strains on the part of employees.

Jahoda (1981) suggests that work provides individuals with certain positive links and identifies the following positive characteristics or “latent functions” of work: Social contact; status and identity; time structure; enforced activity; and, external goals. Of particular interest to the present paper is Jahoda’s (1981) contention that even bad jobs are preferable to unemployment.

Cognitive Phenomenological theory takes the approach that there exists a relationship between stress, the work environment and the individual (Lazarus and Folkman, 1984). At the individual level a worker identifies stressful situations and puts in place appropriate coping mechanisms. In this way, the individual attempts to regulate emotional distress (Dollard and Winefield, 2002). According to this approach, different individuals can interpret the same environment in different ways. This approach places a greater emphasis on the role of individual characteristics in mediating mental health and well-being impacts.
The role of individual characteristics in coping with stress remains a contentious issue in the literature (Kennedy, 2003). Personality attributes can cushion, as well as aggravate, the impact of occupational stress on mental health and well-being outcomes; positive personality attributes may impact as strongly on mental health as might negative personality disposition (Roskies, Louis-Guerin and Fournier, 1993). However, the balance of the empirical evidence overwhelmingly suggests that mental health problems in the workplace largely result from situational factors (Moore et al., 2003; Borland, 2002; Dekker and Schaufeli, 1995; Kinnunen et al., 1999). Lack of control over decision making, ‘burn out’ and effort/reward imbalances link psychological theory to instances of job insecurity and deterioration of mental health in the workplace.

2.2 Unemployment, Job Loss and Mental Health Outcomes

Mathurs and Schofield (1998) provide an informative summary of the Australian medical literature on the impact of unemployment on mental health outcomes. The evidence from the medical literature supports the hypothesis that unemployment causes deterioration in mental health and well-being outcomes among those affected. The extent of that deterioration may be dramatic. Morrell et al. (1993) and Morrell et al. (1998) provide evidence that unemployment is a predisposing factor that increases the risk of suicide, especially in males. O’Brien, Feather and Kabanoff (1994) also report that unemployed Australian youth had higher levels of depression, lower life satisfaction and lower levels of perceived competence than youth in employment while Morrell et al. (1994) find evidence of higher probabilities of psychological disturbance among the unemployed.

Economists have recently taken an interest on the adverse consequences of unemployment on mental health. Clarke and Oswald (1994) found that unemployment and not loss of income had a statistically significant adverse effect on mental well-being. Flatau et al. (2000) provide similar evidence in the Australian context using the 1995 Health Survey and the 1997 Mental Health Survey. They utilised two measures of first measure is derived from responses to questions on time felt down, happy, peaceful, and nervous and the degree to which emotional problems affected the performance of activities. The second measure involved notifications by respondents in the 1997 Mental Health Survey of the mental health conditions depression and nerves, nervousness, tension. On the basis of these two measures, Flatau et al. find that unemployed persons exhibit poorer mental health and well-being outcomes than the full-time employed.

Kennedy (2003) examined the effect of labour force status on the mental health of immigrants in a longitudinal design. The results suggested that causality runs from unemployment to mental health rather than the reverse. Interestingly, Winklemann and Winklemann (1998) conclude that the non-pecuniary impact of unemployment has much more severe effects on ‘life satisfaction’ than the pecuniary effect. Theodossiu (1998) also argues the importance that positive aspects of work have on mental health with the comparison of poorly paid workers. There is also evidence to suggest that there is an adjustment to unemployment so that the long-term unemployed are less unhappy than the short-term unemployed (Clarke and Oswald, 1994).
While there is a large literature on the effect of unemployment on mental health outcomes only a relatively small number of studies have directly examined the relationship between the process of job loss and mental health outcomes. The extant overseas literature in this area suggests that the immediate effects of job loss are significant. Disbelief, misunderstanding, resentment, anxiety, shame are usual feelings and reactions to sudden job loss. In the situation of loss with prior notice, people’s lives are often affected through prolonged insecurity at work and at home with increased stress, tension, anxiety, sadness and resentment (Gago, 1996).

With the loss of employment, individuals lose financial stability, status and social support. The sudden impact of these losses can lead individuals to a series of negative economic and personal events that can have a deleterious impact on personal health and well-being. In addition to the consequences stated above, individuals have been shown to experience increased depressive symptoms, decreased perceptions of competence, decreased self-esteem, higher risk of suicide and abusive behaviour toward others (Price et al., 1998).

The psychosocial stress induced in workers by the fear of unemployment has a significant negative impact on individual health outcomes (Hellgren et al., 2000). In their studies of individuals anticipating job change as a result of impending mass layoffs, Schnall et al. (1992) and Ferrie et al. (1995) conclude that the anticipation of job loss affects mental and physical health even before actual job loss has taken place although risk varies according to individual and workplace factors. Moore et al. (2003) also argue that workers experiencing a chronic downsizing environment fare worse than those exposed to a single one time exposure to layoffs. Essentially, the process of downsizing has repercussions on employees beyond simply the individuals who are laid off. This point is further supported by Parker, Chmiel and Wall (1997) in a study that showed improved well-being among workers only when increased job demands were accompanied by clear role expectations among employees. Clearly, a sense of job security plays an important role in workers’ experience of downsizing. The literature asserts that although dependent on individual perceptions, job insecurity in the downsizing environment causes a variety of physical and psychological problems among employees that is, in part, associated with the way in which organisations handle the process.

2.3 Job Insecurity and Mental Health Outcomes

Table 1 below presents evidence from (OECD, 1997) on employee perceptions of job insecurity in 21 OECD countries. Column 1 shows the “norm” level of job insecurity based on a survey of employees in OECD countries in 1996.1 The second and third columns report the percentage of respondents who do not strongly agree

1 The “norm” level of employment insecurity was calculated as the simple average of the percentage reporting favourable answers to the following questions:  
   a) I am frequently worried about the future of my company.  
   b) My company offers a level of job security as good as, or better than, the job security offered in most other companies in our industry.  
   c) I can be sure of a job with my company as long as I perform well.  
   d) How satisfied are you with your job security.  

The norm level of employment insecurity is 100 per cent minus the norm level of employment security.
with the statement “my job is secure”, taken from the International Social Survey Programme (ISSP). Noticeably, even with falling unemployment rates in the United States and Britain, levels of job insecurity in these countries remain among the highest. Also, Japan recorded the highest “norm” levels of employment insecurity among OECD nations measured despite its relatively low rates of unemployment. Australia had one of the lowest record of job insecurity measured among OECD countries.

Table 1 Three Measures of Workers’ Perspectives of Job Insecurity

<table>
<thead>
<tr>
<th>Country</th>
<th>“Norm” level of employment insecurity</th>
<th>Percentage not strongly agreeing that “my job is secure”</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1996</td>
<td>1989</td>
</tr>
<tr>
<td>Australia</td>
<td>36</td>
<td>..</td>
</tr>
<tr>
<td>Austria</td>
<td>35</td>
<td>47</td>
</tr>
<tr>
<td>Belgium</td>
<td>45</td>
<td>..</td>
</tr>
<tr>
<td>Canada</td>
<td>45</td>
<td>..</td>
</tr>
<tr>
<td>Denmark</td>
<td>38</td>
<td>..</td>
</tr>
<tr>
<td>Finland</td>
<td>47</td>
<td>..</td>
</tr>
<tr>
<td>France</td>
<td>53</td>
<td>..</td>
</tr>
<tr>
<td>Germany</td>
<td>45</td>
<td>61</td>
</tr>
<tr>
<td>Greece</td>
<td>38</td>
<td>..</td>
</tr>
<tr>
<td>Hungary</td>
<td>..</td>
<td>81</td>
</tr>
<tr>
<td>Ireland</td>
<td>43</td>
<td>77</td>
</tr>
<tr>
<td>Italy</td>
<td>44</td>
<td>57</td>
</tr>
<tr>
<td>Japan</td>
<td>56</td>
<td>..</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>..</td>
<td>..</td>
</tr>
<tr>
<td>Mexico</td>
<td>38</td>
<td>..</td>
</tr>
<tr>
<td>Netherlands</td>
<td>38</td>
<td>75</td>
</tr>
<tr>
<td>Norway</td>
<td>31</td>
<td>68</td>
</tr>
<tr>
<td>Portugal</td>
<td>45</td>
<td>..</td>
</tr>
<tr>
<td>Spain</td>
<td>46</td>
<td>..</td>
</tr>
<tr>
<td>Sweden</td>
<td>47</td>
<td>..</td>
</tr>
<tr>
<td>Switzerland</td>
<td>42</td>
<td>..</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>54</td>
<td>82</td>
</tr>
<tr>
<td>United States</td>
<td>52</td>
<td>72</td>
</tr>
<tr>
<td><strong>Unweighted Average</strong></td>
<td><strong>44</strong></td>
<td><strong>68</strong></td>
</tr>
</tbody>
</table>

.. Data not available

Notes: The “norm” level of employment insecurity is a percentage measure used in OECD (1997) using respondent answers to questions on employment security. Higher levels reflect higher insecurity. Source: OECD (1997).

Sverke, Hellgren and Naswall (2002) divide the consequences of job insecurity into four main categories: Job attitudes; organisational attitudes; health; and work related behaviour. Significant and negative correlations were found between job insecurity and each of the above four categories, with the strongest reported relationship being found in respect to job and organisational attitudes. In terms of the latter effects, a reduction in organisational trust (Ashford, Lee and Bobko, 1989) and an increase in non-cooperative behaviour at work (Lim, 1996) are common among those insecure about their employment. Other studies have also reported job insecurity as having a negative effect on physical health outcomes and higher reports of
psychological distress. Mohr (2000) suggested that job insecurity was mainly connected to an increase in psychosomatic complaints in anxiety.

Further studies have shown that perceptions of job insecurity among employees lead to higher levels of job dissatisfaction (Ashford, Lee and Bobko, 1989; Davy, Kinicki and Sheck, 1991), an increase in negative physical health outcomes (Burchell, 1994; Heaney, Israel and House, 1994; Dooley, Rook and Catalano, 1987; Kuhnert, Sims and Lahey, 1989; Roskies and Louis-Guerin, 1990), higher reports of psychological distress (Burchell, 1994; Bussing, 1999; De Witte, 1999; Hellgren, Sverke, Isaksson, 1999; Lim, 1996; Dekker and Schaufeli, 1995; Probst, 2000), greater feeling of mental, emotional and physical exhaustion (Dekker and Schaufeli, 1995; Kinnunen et al., 1999) and lower safety motivation and compliance (Probst and Brubaker, 2001). The negative effects on the individual of job insecurity have played an important part of psychology and occupational health research in recent years. Much of the international research in this field is cross-sectional in nature. Only a limited number of longitudinal studies have also shown a causal relationship between job insecurity and work and health related variables (Burchell, 1994; Dekker and Schaufeli, 1995; Hellgren and Sverke, 2003).

There is a growing interest in job insecurity in Australia. Wooden (1999) reports evidence of a decline in job insecurity in the early 1990s but he suggests that this effect had reduced by the end of the decade. Kelley, Evans and Dawkins (1998) suggest a more marked effect between 1989 and 1996 for the decline in workers being either ‘fairly’ or ‘very’ secure about their employment. This effect was shown to have continued in Borland (2002) with perceptions of job security in decline following September 11 2001 and several major corporate collapses in Australia. Also shown was that the likelihood of job loss within 12 months is 5 to 10 per cent on average in Australia. Workers over-estimate this amount to be approximately 12 per cent. While around 45 per cent of these workers believe they would not find similar work after losing existing employment.

The Australian literature on job security and health outcomes is scarce, especially in respect to empirical studies. Some researchers have argued that job security is linked to declining job satisfaction (Kelly, Evans and Dawkins, 1998). Dockery (2003) uses HILDA’s ‘likelihood of losing job in the next 12 months’ variable (taken as a measure of job insecurity) and uses this as one of the explanatory variable in an ordered probit model on wellbeing. The analysis divided job security into two dummy variables. One dummy variable reflected workers who believed they had between 10 to 50 per cent chance of losing their jobs, and a smaller group of workers who believed they were more likely than not to lose their jobs. Interestingly, the study found that the effect of feeling moderately insecure was, in fact, markedly more detrimental to wellbeing than the effect of being highly insecure. The conclusion reached by Dockery (2003) was that due to the cross-section nature of the data uses (HILDA Wave 1 only) and unexpected nature of the findings, the issue of job security and wellbeing required further analysis. A key aim of this paper is to re-examine this issue using the first two waves of HILDA. An alternative measure to that used by Dockery (2003) in the HILDA survey is provided by the HILDA variable ‘I have a
secure future in my job’. This measure may capture more long-term job security effects than that used by Dockery (2003).

3. Data and Method

3.1 The Household, Income and Labour Dynamics in Australia (HILDA) Survey

This study makes use of Waves 1 and 2 of the Household, Income and Labour Dynamics in Australia (HILDA) survey to examine the relationship between job insecurity and mental health and well-being. Wave 1 of the HILDA survey was conducted for a sample of 11,693 Australian households identified as in-scope\(^2\), with interviews being completed across all eligible members for 6,872 households (66 per cent response rate). In total, 7,682 households were interviewed with 15,123 eligible persons, of which 13,965 completed the Person Questionnaire (PQ) and 13,158 completed the Self-Completion Questionnaire (SCQ). The HILDA Annual Report (2003) demonstrates that the HILDA sample bears close resemblance to the wider population of Australia (exceptions include the under-representation of Sydney in the sample)\(^3\).

All individuals from the 7,682 responding households in Wave 1 were followed into Wave 2. Of the 7,682 reporting households from Wave 1, 69 moved out of scope (due to death or moves overseas) and an additional 713 households were added to the sample as a result of changes in household composition. Overall, there were a total of 8,326 households in the Wave 2 sample, of which 7,245 responded (87 per cent). Table 2 describes the Wave 2 person outcomes by Wave 1 person outcomes. There were 11,993 respondents to both Wave 1 and Wave 2 surveys.

<table>
<thead>
<tr>
<th>Wave 1</th>
<th>Wave 2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Respondent</td>
<td>Non-respondent</td>
</tr>
<tr>
<td>----------</td>
<td>----------------</td>
</tr>
<tr>
<td>Respondent</td>
<td>11993</td>
</tr>
<tr>
<td>Non-respondent</td>
<td>222</td>
</tr>
<tr>
<td>Child</td>
<td>250</td>
</tr>
<tr>
<td>New entrant</td>
<td>576</td>
</tr>
<tr>
<td>Total</td>
<td>13041</td>
</tr>
</tbody>
</table>


Attrition bias is an important aspect of longitudinal surveys. There was 13.2 per cent attrition between Wave 1 and Wave 2 in HILDA. Attrition was found highest (HILDA, 2003) in the following groups:

\footnote{In-scope refers to, for example, dwellings that consist of Australian residents only and were not vacant and listed as residential buildings.}

\footnote{The comparison is Australian Bureau of Statistics (ABS) estimates come from the Monthly Population Survey for October 2001, or August 2001 in the case of Indigenous status and employment status (as cited in HILDA, 2003). The HILDA and ABS estimates are for people aged 15 years or above.}
- Living in Sydney, Melbourne, rural Western Australia or Tasmania;
- Aged 15 to 34 years;
- Single or living in a de facto marriage;
- Born in a non-English-speaking country;
- Low levels of education;
- Living in an apartment, flat or unit; or
- Unemployed in Wave 1.

The differences in labour force status were driven by the differences in response rates by age. The attrition bias will be a limitation in our modelling of mental health outcomes and further analysis of this study should involve controlling for this effect.

3.2 Measuring Mental Health and Well-being: The SF – 36 and MCS

Growing recognition of the importance of mental health for the economic, social and human capital of society, and the need to consider mental health outcomes in policies directed at social welfare, employment, education, crime, housing, trade and industry and finance outcomes has led to the demand for consistent and comparable mental health indicators (Jenkins, 2001). This analysis uses a measure of mental health from the SF–36 (this scale was also used in Flatau et al., 2000). The SF–36 is a widely used self-completion measure of general health status and has proven test-retest reliability and sound psychometric qualities (Ware and Gandek, 1998). It is a generic measure, as opposed to one that targets a specific age, disease, or treatment group. The experience to date with the SF–36 has been documented in over 1000 publications and its reliability and validity, as well as its instructions for use are documented in the SF–36 user’s manual (Ware, Snow and Kosinski, 1993).

The SF–36 measure eight domains of health: mental health, general health perceptions, physical functioning, role limitations due to physical health, bodily pain, vitality, social functioning, and role limitations due to emotional problems. We focus on the SF–36 mental health score with a scale of 0 to 100. Lower scores on the mental health score represent greater mental impairment.

Factor analysis of correlations among the eight SF–36 scores have consistently identified two factors interpreted as “physical” and “mental” dimensions of health status (Ware, Kosinski and Keller 1994). The mental health dimension is referred to as the Mental Component Summary scale (MCS). The MCS is a psychometrically-based combination of all eight summary scales, but most heavily weighted on the mental health, role-emotional, and social functioning scales. The summary score is also a widely used measure of mental health. The MCS scale is standardised to have a mean of 50 and standard deviation of 10. Sanderson and Andrews (2002) define ‘moderate poor mental health’ as a MCS score of less than 40 while severe poor mental health is taken as a score less than 30.

We have chosen as our main job security variable from the HILDA survey as ‘I have a secure future in my job’. An alternative measure is used for comparison ‘Per cent chance of losing job in the next 12 months’. We label the first job security variable (base) and the second (alternative). The (base) variable uses a scale of 1 to 7, compared to the (alternative) variable which is measured from 1 to 100. The (alternative) variable
may be restrictive in the sense that it refers to a specific time period (one year). Some employees may have contracts organised of over one year, but the sense of insecurity can still be high due to occupation-specific and other market factors. An advantage of this short time approach may be that it captures an immediate sense of insecurity among workers facing job loss.

The total number of respondents in both Waves of HILDA was 11,993. 6,412 observations were missing with respect to the (base) job security variable; 4,088 of these included people who had not been asked the question. The majority of these people are unemployed and not in the labour force respondents. We shall return to the question of how we deal with these respondents in section 5.

4. Descriptive Statistics

4.1 Mental Health for Selected Demographics and Socio-Economic Groups

The prevalence of ‘moderate’ and ‘severe’ poor mental health (using the Sanderson and Andrews, 2002 typology) among HILDA respondents in Waves 1 and 2 for selected demographics and socio-economic groups is provided in Table 3 which uses the MCS scale. In regards to age, mental impairment is clearly highest among the younger cohorts. Of particular interest are the mental health scores across employment status. Across both Waves, higher rates of mental disability are more common for people without work. The results indicate no significant difference in the mental health of persons employed full-time and part-time.

The largest mental health outcome distinctions exist between those employed and the other four labour force categories. For unemployed persons looking for full-time work, 32.3 per cent are located in the severe and moderate poor mental health locations compared with 19.2 per cent of full-time employed persons. The not in the labour force (NILF) categories also indicate high rates of poor mental health, although not as high as for the unemployed group. Noticeably, mental health outcomes are poorer for the marginally attached NILF group rather than the non-NILF group.4

We now turn to an exploration of the relationship between job security and mental health outcomes. For illustrative purposes we use first the base job security measure variable and the MCS scale. The MCS is rescaled to lie between 0 and 10 for the purposes of the present analysis. The relationship between job security and mental health outcomes is depicted in Figure 1 for Wave 2 of HILDA. The estimates reveal a marked trend such that those with higher job security report better mental health outcomes and those with poorer job security report worse mental health outcomes.

---

4 The HILDA definition of marginal attachment (based on ABS definitions) is that persons not in the labour force must:
   a) want to work and be actively looking for work but not available to start work in the reference week; or
   b) want to work though not actively looking for work, but would be available to start work within four weeks.
Table 3  Incidence of Moderate to Severe Mental Disability (MCS < 40)
Amongst Selected Groups, Waves 1 and 2, HILDA, per cent

<table>
<thead>
<tr>
<th></th>
<th>MH&lt;40</th>
<th>MH&lt;40</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>20.4</td>
<td>25.1</td>
</tr>
<tr>
<td>Female</td>
<td>22.8</td>
<td>25.7</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20-24</td>
<td>27.2</td>
<td>33.4</td>
</tr>
<tr>
<td>25-34</td>
<td>25.1</td>
<td>29.6</td>
</tr>
<tr>
<td>35-44</td>
<td>25.3</td>
<td>25.2</td>
</tr>
<tr>
<td>45-54</td>
<td>20.5</td>
<td>25.1</td>
</tr>
<tr>
<td>55-64</td>
<td>19.4</td>
<td>21.3</td>
</tr>
<tr>
<td>65+</td>
<td>19.0</td>
<td>19.5</td>
</tr>
<tr>
<td>Job Status</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed full-time</td>
<td>19.2</td>
<td>23.8</td>
</tr>
<tr>
<td>Employed part-time</td>
<td>19.7</td>
<td>22.6</td>
</tr>
<tr>
<td>Unemployed, looking for full-time work</td>
<td>32.3</td>
<td>36.8</td>
</tr>
<tr>
<td>Unemployed, looking for part-time work</td>
<td>33.1</td>
<td>35.2</td>
</tr>
<tr>
<td>Not in the labour force, marginally attached</td>
<td>28.2</td>
<td>34.9</td>
</tr>
<tr>
<td>Not in the labour force, not marginally attached</td>
<td>22.5</td>
<td>26.1</td>
</tr>
</tbody>
</table>


As mentioned previously, however, a relationship among the changes in variables between time periods indicates a more robust causal relationship. Therefore, figure 2 maps out the mean changes to the MCS scale according to changes in job security. Again the trend is marked, but there is now some asymmetry in the response. Those who moved (dramatically) towards more positive job security outcomes appeared to have stronger positive mental health outcomes than those who moved in the opposite direction in terms of job security. In other words, those who felt more job insecure suffered less in terms of poorer mental health than those who felt a positive change in their job security.

As a comparison we use the same method to study the alternative variable ‘per cent chance of losing job in the next 12 months’ (see Figures 3 and 4). For the alternative measure of job security used in Dockery (2003) the relationship with mental health appears to be weak. This was Dockery (2003) conclusion as well. The mean levels of the MCS score are lowest around low to moderate levels of job insecurity. Whereas, the highest levels of job insecurity relate also to some of the highest scores in the MCS. There also appears to be no apparent trend within the change analysis either. Of course, under regression analysis we can control for other effects that may com into play.
Figure 1  
Mean Mental Health Outcomes (MCS rescaled 0-10) by (Base) Job Security, Wave 2

Source: HILDA Wave 2.

Figure 2  
Change in Mean Mental Health Outcomes (MCS rescaled 0-10) by Change in (Base) Job Security

Source: HILDA Wave 1 and Wave 2.
Figure 3  Mean Mental Health Outcomes (MCS rescaled 0-10) by (Alternative) Job Security, Wave 2

Source: HILDA Wave 1 and Wave 2.

Figure 4  Change in Mean Mental Health Outcomes (MCS rescaled 0-10) by Change in Job Security, Wave 2

Source: HILDA Wave 1 and Wave 2.
We also examined the impact of a final measure of job insecurity, namely, actual job loss. The job loss variable was constructed on the basis of those people who lost their job between Waves 1 and 2 or were not currently working at the time of the Wave 2 interview. Our results were contrary to expectations. Both those who had not suffered a job loss and those who did suffer a job loss suffered a very small decline in their mental health scores. However, those who were not impacted on by adverse labour market outcomes appeared to suffer a marginally greater loss in mental health outcomes than those who were. These results were unexpected and will be tested again in the panel regression analysis.

5 Regression Models and Results

We now turn to our regression analysis. Our first set of results is derived from cross-section OLS models of the relationship between mental health and job insecurity outcomes on the one hand and mental health and unemployment outcomes on the other. The variables used in the statistical analysis of the HILDA dataset are defined below in Table 4.

The cross-section OLS results are presented in Tables 6 and 7 for Waves 1 and 2. The analysis is restricted to those employed (i.e., those that have measured job security outcomes). The results are presented for the (base) job security variable as the dependent variable. They support the hypothesis that job security is positively linked to mental health outcomes. In both regressions, the job security variable is highly significant ($P = 0$). A one percentage point increase in the job security measure is associated with around a 0.06 increase in the MCS measure. The alternative measure of job security also provides similar results without providing the same level of robustness (results not presented here).

A second cross-section analysis examined the effect of unemployment on mental health outcomes (results not presented here). In Wave 1 the state of unemployment had a significant negative impact on the mental health of individuals among those seeking full-time employment. The relative impact, however, is small considering the size of the standardised coefficients for both the job security and unemployment regressions. As one point of comparison the standardised coefficient of physical function ($\beta_u = 0.238$) is seven times larger than for unemployment full-time ($\beta_u = 0.029$) variable whereas in the case of the job security regression the effect of job security was over four times as large as those of physical function.
Table 5  Regression Variables

<table>
<thead>
<tr>
<th>Dependent Variable(s)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental Health</td>
<td>The dependent variable is mental health and is measured with the MCS and SF-36 raw mental health scores. The MCS is a summary measure of mental health derived from the SF-36 using a method called principal components analysis (see Ware, 1994). The MCS is a psychometrically based combination of all eight SF-36 summary scales but most heavily weighted on the mental health, role-emotional, and social functioning scales. The MCS is a continuous measure standardised to represent the general Australian population with a mean of 50 and standard deviation 10. For panel analysis, the MCS score is turned into differenced variable by taking Waves 1 from 2.</td>
</tr>
<tr>
<td>SF-36 Mental Health</td>
<td>The SF-36 mental health measure is a continuous variable based on respondents subjective view of mental health scaled from 0 to 100. The SF-36 has been kept as a raw score for comparison between Waves 1 and 2. As with the MCS, the SF-36 mental health score is turned into a differenced variable by taking Waves 1 from 2.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explanatory Variables</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Job Security</td>
<td>This is a continuous variable created using information from the response “I have a secure future in my job”. It records a subjective view of job security ranging from one to seven. The job security variable like the MCS has been explained in more detail within the chapter.</td>
</tr>
<tr>
<td>Labour Force Status</td>
<td>The (alternative) variable is a continuous variable scaled from 0 to 100. This variable corresponds to the question ‘Per cent chance of losing job in next 12 months’.</td>
</tr>
<tr>
<td>Job Loss</td>
<td>This is a binary variable representing the transition from having been either laid off, retrenched or made redundant in the past year to unemployment in Wave 2 and provided the respondent was employed in Wave 1. It records involuntary job loss as 1, otherwise equal to 0.</td>
</tr>
<tr>
<td>Age</td>
<td>This category is defined into 7 binary variables for the panel regressions and a continuous variable from 1 to 6 (only 6 categories are used) for the cross section regressions. The age cohorts include 15-19 (not used), 20-24, 25-34, 35-44, 45-54, 55-64, 65+ which equal 1 if respondent is in the age bracket and 0 otherwise.</td>
</tr>
<tr>
<td>Gender</td>
<td>This is a dummy variable to control for differences across gender, for example, the variable male equals 1 for ‘yes’ and 0 for ‘no’.</td>
</tr>
<tr>
<td>Physical Condition</td>
<td>This is taken as a raw score from the SF-36 measure of physical function. Physical function has a scale of 0 to 100. A number of studies have purported that physical function may be associated with mental health (see for example Questad et al., 1988).</td>
</tr>
<tr>
<td>Long-Term Health</td>
<td>This is a binary variable used to control for long-term health conditions. The variable equals 1 for ‘yes’ to have a long-term health condition or disability and 0 for ‘no’ to this question.</td>
</tr>
<tr>
<td>Wealth</td>
<td>This is a continuous variable of household net worth, in terms of dollars. The</td>
</tr>
</tbody>
</table>

---

5 The employment states have been modelled on the definitions provided by the ABS (2001) Labour Statistics: Concepts Sources and Methods. See ABS (2001) for a detailed description of these categories.
variable was already imputed in the HILDA survey to take account of missing values. For a discussion on the imputation of the wealth variables see Watson, (2004). The purpose of imputation is to correct the bias introduced into estimates when working with incomplete data.

### Income
This was taken as the imputed total financial year income, measured in dollars. This includes income from wages and all other sources.

### Proportion of Time Spent in Unemployment
This is proportion of time spent in unemployment measured as a percentage of a person’s working life. This was calculated by summing the total time spent in unemployment and dividing by the total time spent in the labour force. The value is a percentage ranging from 0 to 100.

### State
This is the State variable including eight dummy variables New South Wales (NSW), Victoria (VIC), Queensland (QLD), South Australia (SA), Western Australia (WA), Tasmania (TAS), Northern Territory (NT), Australian Capital Territory (ACT). The variable equals 1 for ‘yes’ and 0 for ‘no’ to the State category.

### Married
This is a dummy variable set to control for married persons, equals 1 for ‘yes’ to married and 0 for ‘no’ not married.

### Smoke
This is a continuous variable set to control for various levels of smoking. The variable equals 1 for people who do not smoke, 2 for low levels of smoking, 3 for moderate levels of smoking and 4 for high levels of smoking.

### Alcohol
This is a continuous variable measuring levels of alcohol consumption. For no consumption the value is 1, low consumption 2, moderate consumption 3 and high consumption 4. For the panel regression the levels

### Major Event
The experience of a major event is used as a set of three dichotomous variables to control for mental health effects. The variable records a 1 for ‘Yes’ to the transition and 0 for ‘No’ to the transition. The following events have been controlled for:
- Separation.
- Personal injury.
- Victim of violence.

### Children
This is a set of two dummy variables to control for people who have a child within the age of 0 to 14. The first dummy variable is for people with children aged four or below. The second dummy variable is for children aged 5 to 14. The variables equal 1 for ‘yes’ and 0 for ‘no’ to the category.

### Occupation
A set of six dummy variables that label occupations based on the ASCO 1-digit classifications. The categories are professional, associate professional, tradesperson and related workers, advanced clerical and service workers, intermediate production and transport workers, elementary clerical, sales and service workers and ‘other’. The values are 1 for ‘yes’ to the occupation and 0 for ‘no’ to the occupation.

### Overemployed
A set of four dummy variables that have been categorised to represent people who would like to work less hours than they currently work. The categories are 1 to 9 hours, 10 to 19 hours, 20 to 29 hours, 30 plus hours. The variable equals 1 for ‘yes’ to the category and 0 for ‘no’.

### Underemployed
A set of four dummy variables measuring different levels of underemployment. There are two forms of underemployment recognised by the ABS (2001) Labour Statistics: Concepts Sources and Methods, these are time-related underemployment and inadequate employment situation. We adapt a measure of the time-related underemployment to represent the amount of additional hours a person would like to work per week. We do not take into account the constraints of whether the individual is available to work these hours and whether they work less than a prescribed threshold. The categories are 1 to 9 hours, 10 to 19 hours, 20 to 29 hours, 30 plus hours. The variable equals 1 for ‘yes’ to the category and 0 for ‘no’.
<table>
<thead>
<tr>
<th></th>
<th>Unstand. B</th>
<th>Stand. B</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>49.869</td>
<td>-</td>
<td>0.000</td>
</tr>
<tr>
<td>Job Security</td>
<td>0.674</td>
<td>0.148</td>
<td>0.000</td>
</tr>
<tr>
<td>Married</td>
<td>1.549</td>
<td>0.094</td>
<td>0.000</td>
</tr>
<tr>
<td>Age</td>
<td>0.367</td>
<td>0.058</td>
<td>0.001</td>
</tr>
<tr>
<td>Child 0 to 4</td>
<td>-5.104</td>
<td>-0.054</td>
<td>0.000</td>
</tr>
<tr>
<td>Smoke</td>
<td>-0.459</td>
<td>-0.072</td>
<td>0.000</td>
</tr>
<tr>
<td>Long-Term Health Condition</td>
<td>-2.788</td>
<td>-0.114</td>
<td>0.000</td>
</tr>
<tr>
<td>Male</td>
<td>1.291</td>
<td>0.078</td>
<td>0.000</td>
</tr>
<tr>
<td>Wealth</td>
<td>1.117E-06</td>
<td>0.073</td>
<td>0.000</td>
</tr>
<tr>
<td>Alcohol</td>
<td>-0.936</td>
<td>-0.051</td>
<td>0.006</td>
</tr>
<tr>
<td>Professional</td>
<td>-0.418</td>
<td>-0.017</td>
<td>0.292</td>
</tr>
<tr>
<td>Associate Professional</td>
<td>0.354</td>
<td>0.015</td>
<td>0.378</td>
</tr>
<tr>
<td>Tradesperson and Related Workers</td>
<td>0.983</td>
<td>0.024</td>
<td>0.115</td>
</tr>
<tr>
<td>Advanced Clerical and Service Workers</td>
<td>0.424</td>
<td>0.015</td>
<td>0.360</td>
</tr>
<tr>
<td>Underemployed (1-9)</td>
<td>-0.740</td>
<td>-0.022</td>
<td>0.132</td>
</tr>
<tr>
<td>Underemployed (10-19)</td>
<td>-0.773</td>
<td>-0.021</td>
<td>0.136</td>
</tr>
<tr>
<td>Underemployed (20-29)</td>
<td>-1.184</td>
<td>-0.016</td>
<td>0.248</td>
</tr>
<tr>
<td>Underemployed (30+)</td>
<td>-1.822</td>
<td>-0.016</td>
<td>0.247</td>
</tr>
<tr>
<td>Overemployed (1-9)</td>
<td>-1.062</td>
<td>-0.039</td>
<td>0.007</td>
</tr>
<tr>
<td>Overemployed (10-19)</td>
<td>-1.961</td>
<td>-0.082</td>
<td>0.000</td>
</tr>
<tr>
<td>Overemployed (20-29)</td>
<td>-2.015</td>
<td>-0.054</td>
<td>0.000</td>
</tr>
<tr>
<td>Overemployed (30+)</td>
<td>-1.527</td>
<td>-0.026</td>
<td>0.062</td>
</tr>
</tbody>
</table>

R-squared: 0.106
R-squared adjusted: 0.099

Source: HILDA Wave 1
<table>
<thead>
<tr>
<th>Variable</th>
<th>Unstand. B</th>
<th>Stand. B</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>50.700</td>
<td>-</td>
<td>0.000</td>
</tr>
<tr>
<td>Job Security</td>
<td>0.830</td>
<td>0.178</td>
<td>0.000</td>
</tr>
<tr>
<td>Married</td>
<td>0.514</td>
<td>0.032</td>
<td>0.041</td>
</tr>
<tr>
<td>Age</td>
<td>0.452</td>
<td>0.072</td>
<td>0.000</td>
</tr>
<tr>
<td>Child 0 to 4</td>
<td>-2.140</td>
<td>-0.024</td>
<td>0.091</td>
</tr>
<tr>
<td>Smoke</td>
<td>-0.271</td>
<td>-0.042</td>
<td>0.004</td>
</tr>
<tr>
<td>Long-Term Health Condition</td>
<td>-1.728</td>
<td>-0.068</td>
<td>0.000</td>
</tr>
<tr>
<td>Male</td>
<td>1.394</td>
<td>0.086</td>
<td>0.000</td>
</tr>
<tr>
<td>Wealth</td>
<td>0.000</td>
<td>0.041</td>
<td>0.007</td>
</tr>
<tr>
<td>Alcohol</td>
<td>-0.024</td>
<td>-0.005</td>
<td>0.734</td>
</tr>
<tr>
<td>Professional</td>
<td>-0.828</td>
<td>-0.047</td>
<td>0.014</td>
</tr>
<tr>
<td>Associate Professional</td>
<td>-0.410</td>
<td>-0.019</td>
<td>0.283</td>
</tr>
<tr>
<td>Tradesperson and Related Workers</td>
<td>0.135</td>
<td>0.006</td>
<td>0.736</td>
</tr>
<tr>
<td>Advanced Clerical and Service Workers</td>
<td>0.564</td>
<td>0.014</td>
<td>0.350</td>
</tr>
<tr>
<td>Intermediate Production and Transport Workers</td>
<td>0.072</td>
<td>0.003</td>
<td>0.870</td>
</tr>
<tr>
<td>Elementary Clerical, Sales and Service Workers</td>
<td>-0.157</td>
<td>-0.006</td>
<td>0.734</td>
</tr>
<tr>
<td>Event Separated</td>
<td>-3.935</td>
<td>-0.099</td>
<td>0.000</td>
</tr>
<tr>
<td>Event Injured</td>
<td>-1.398</td>
<td>-0.041</td>
<td>0.003</td>
</tr>
<tr>
<td>Event Victim of Violence</td>
<td>-3.931</td>
<td>-0.060</td>
<td>0.000</td>
</tr>
<tr>
<td>Underemployed (1-9)</td>
<td>-0.614</td>
<td>-0.018</td>
<td>0.217</td>
</tr>
<tr>
<td>Underemployed (10-19)</td>
<td>-0.551</td>
<td>-0.015</td>
<td>0.300</td>
</tr>
<tr>
<td>Underemployed (20-29)</td>
<td>-1.323</td>
<td>-0.020</td>
<td>0.154</td>
</tr>
<tr>
<td>Underemployed (30+)</td>
<td>-2.270</td>
<td>-0.017</td>
<td>0.214</td>
</tr>
<tr>
<td>Overemployed (1-9)</td>
<td>-2.239</td>
<td>-0.081</td>
<td>0.000</td>
</tr>
<tr>
<td>Overemployed (10-19)</td>
<td>-1.965</td>
<td>-0.085</td>
<td>0.000</td>
</tr>
<tr>
<td>Overemployed (20-29)</td>
<td>-2.050</td>
<td>-0.058</td>
<td>0.000</td>
</tr>
<tr>
<td>Overemployed (30+)</td>
<td>-1.636</td>
<td>-0.038</td>
<td>0.006</td>
</tr>
</tbody>
</table>

R-squared: 0.143
R-squared adjusted: 0.136

Source: HILDA Wave 2.
The second set of results comes from our panel regression analysis. Using change variables provides a more robust approach than the cross-section analyses as the causal links are more obvious. Taking differences is also one method to reduce multicollinearity among variables and the effect of heteroskedasticity.

We start with the fixed effects regression model specified by the following equation:

\[ y_{it} = i\alpha_i + X_{it}\beta + \epsilon_{it}. \]  

Taking first differences we have:

\[ y_{it} - y_{it-1} = (X_{it} - X_{it-1})\beta + (\epsilon_{it} - \epsilon_{it-1}). \]  

The differenced model is used in our regression analysis with the intent of capturing the relationship between changes to job security, transitions of job loss and changes to mental health.

Equation (2) shows the first panel regression model used for estimation; taking differences excludes the fixed effects. However, the error term \( v_t(\epsilon_{it} - \epsilon_{it-1}) \) appearing in equation (2) may not satisfy one of the assumptions of the classical linear regression model; the assumption being that the disturbances are not serially correlated. If the original \( \epsilon_i \) is serially uncorrelated, the error term \( v_t \) will in most cases be serially correlated. Autocorrelation should be corrected as it produces inefficient estimates of the estimators.

In practice, it is usually assumed that \( \epsilon_t \) follows the first order autoregressive scheme:

\[ \epsilon_t = \rho \epsilon_{t-1} + \delta_t, \quad \text{where } |\rho|<1 \text{ and,} \]  

\[ \delta_t \text{ follows standard OLS assumptions of zero expected value, constant variance and non-autocorrelation.} \]

Assuming the validity of equation (3), the autocorrelation can be satisfactorily resolved by finding \( \rho \), the coefficient of autocorrelation. Once \( \rho \) is known the following generalised, quasi-difference equation can be estimated:

\[ y_{it} - \hat{\rho} y_{it-1} = (1-\hat{\rho})\kappa + (X_{it} - \hat{\rho} X_{it-1})\beta + (\epsilon_{it} - \hat{\rho} \epsilon_{it-1}) \]  

We estimated \( \rho \) and found the autocorrelation coefficient equal to 0.4. To account for the fixed effects \( \alpha_{it} \) that were in equation (1), the term \( \alpha_{it}(1-\hat{\rho}) \) is effectively added to equation (4) to give:

\[ y_{it} - \hat{\rho} y_{it-1} = (1-\hat{\rho})\kappa + \hat{\alpha}_{it}(1-\hat{\rho}) + (X_{it} - \hat{\rho} X_{it-1})\beta + (\epsilon_{it} - \hat{\rho} \epsilon_{it-1}) \]  

Previously it was mentioned that \( \rho \) was 0.4, we use the Generalised, or quasi-difference procedure (Gujarati, 1995; p. 427) to estimate \( \rho \) to adjust for autocorrelation. The first step is to regress the residuals by the standard OLS routine:
\[ \hat{u}_t = \hat{\rho} u_{t-1} + v_t. \]  

(6)

With \( \hat{\rho} \) obtained from the regression of \( u_t \) on \( u_{t-1} \), equation (5) can be estimated. The fixed effects model is used to control for variables that differ between cases but are constant over time. This is equivalent to generating dummy variables to control for these fixed “case effects”. One assumption of the model is that the dummy variables such as age and marriage will remain constant over the one year period. Although a limitation, it is expected that the biasing effects of this assumption are marginal. The second panel model adjusted for autocorrelation is specified below:

\[ y_{i2} - \hat{\rho} y_{i1} = (1-\hat{\rho})\kappa + \alpha_{i2}(1-\hat{\rho}) + (X_{i2} - X_{i1})\beta_1 + (e_{i2} - \hat{\rho} e_{i1}) \]  

(7)

The model may be termed as a generalised fixed effects equation that adjusts for autocorrelation of lag one and minimises multicollinearity and heteroscedasticity by differencing between Waves 1 and 2.

Our panel results are presented in Table 8 below and in differenced form in Table 9. Our analysis at this stage can only be described as exploratory in nature. The key difficulties involved here are both conceptual in nature and also relate to underlying data problems. We can examine the impact on mental health outcomes of the change in job security loss for those who remain in employment and we can examine the impact on mental health outcomes of those who lose their jobs but the difficulty lies in the fact that job losers by definition cannot be insecure about their jobs as they have no jobs to be insecure about. Hence, a difference in job security (or insecurity) does not exist for this group.

The second problem is that the number of those who lose their jobs is relatively small. Only 84 employed individuals in Wave 1 were unemployed in Wave 2 and had been identified as being laid off, retrenched or made redundant between the two waves. Furthermore, not all of these were recent job losers. Clearly, we would prefer a much larger sample which would enable us to take into account better how recently to the survey data the loss of a job was. Hence, we hold grave doubts about the veracity of the estimates of job loss on mental health and well-being outcomes.

Bearing these qualifications in mind, the regression output indicates that changes in job security have significant impacts on changes in mental health outcomes. An improvement in job security outcomes results in an improvement in mental health outcomes. It was found that the impact of an adverse one percentage point change to job security is to decrease mental health by 0.22 ((1.58/50)*100/14.3) percentage points. The effect is marked, translating to a change in the MCS by 4.361 as a result of a one standard deviation change in job security. The difference equation model results presented in Table 9 display the same effects. The difference model examines the impact on changes in mental health of changes in job security, job loss, the unemployment to employment transition and the transition from unemployment to out of the labour force.
Table 8  Fixed Panel Regression Statistics of Job Security and Mental Health

<table>
<thead>
<tr>
<th></th>
<th>Unstand. B</th>
<th>Stand. B</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>26.031 (0.702)</td>
<td>-</td>
<td>0.000</td>
</tr>
<tr>
<td>Change to Job Security</td>
<td>1.580 (0.029)</td>
<td>6.828 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Job Loss</td>
<td>3.168 (0.006)</td>
<td>0.365 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Change to Physical Function</td>
<td>0.034 (0.003)</td>
<td>1.141 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Unemployment to Employment</td>
<td>-1.821 (0.753)</td>
<td>-0.259 (0.016)</td>
<td></td>
</tr>
<tr>
<td>Age 20-24</td>
<td>-5.404 (1.090)</td>
<td>0.129 (0.047)</td>
<td></td>
</tr>
<tr>
<td>Age 25-34</td>
<td>-1.290 (0.643)</td>
<td>-0.293 (0.045)</td>
<td></td>
</tr>
<tr>
<td>Age 35-44</td>
<td>-0.432 (0.647)</td>
<td>-0.106 (0.504)</td>
<td></td>
</tr>
<tr>
<td>Age 45-54</td>
<td>-0.074 (0.664)</td>
<td>-0.017 (0.911)</td>
<td></td>
</tr>
<tr>
<td>Age 55-64</td>
<td>3.49 (0.684)</td>
<td>-0.718 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Age 65+</td>
<td>1.047 (0.096)</td>
<td>1.669 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Child 0 to 4</td>
<td>0.273 (1.018)</td>
<td>0.022 (0.789)</td>
<td></td>
</tr>
<tr>
<td>Child 5 to 14</td>
<td>-0.625 (0.506)</td>
<td>-0.104 (0.217)</td>
<td></td>
</tr>
<tr>
<td>Non-English speaking background</td>
<td>-0.450 (0.238)</td>
<td>-0.153 (0.059)</td>
<td></td>
</tr>
<tr>
<td>Wealth</td>
<td>6.011e-06</td>
<td>0.490 (0.202)</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>7.92e-05</td>
<td>0.155 (0.001)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>-0.015 (0.173)</td>
<td>-0.008 (0.930)</td>
<td></td>
</tr>
<tr>
<td>Married</td>
<td>0.353 (0.183)</td>
<td>0.176 (0.054)</td>
<td></td>
</tr>
<tr>
<td>NSW</td>
<td>-0.004 (0.622)</td>
<td>-0.358 (0.995)</td>
<td></td>
</tr>
<tr>
<td>VIC</td>
<td>-0.242 (0.624)</td>
<td>-0.234 (0.698)</td>
<td></td>
</tr>
<tr>
<td>QLD</td>
<td>-0.125 (0.632)</td>
<td>-0.258 (0.844)</td>
<td></td>
</tr>
<tr>
<td>SA</td>
<td>-0.093 (0.656)</td>
<td>-0.203 (0.887)</td>
<td></td>
</tr>
<tr>
<td>WA</td>
<td>0.459 (0.654)</td>
<td>0.322 (0.484)</td>
<td></td>
</tr>
<tr>
<td>TAS</td>
<td>1.121 (0.762)</td>
<td>0.102 (0.141)</td>
<td></td>
</tr>
<tr>
<td>Long-Term Health Condition</td>
<td>-1.349 (0.341)</td>
<td>-0.346 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Event-separated</td>
<td>-1.592 (0.445)</td>
<td>-0.293 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Event-violence</td>
<td>-2.298 (0.625)</td>
<td>-0.296 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Underemployed (1-9)</td>
<td>-1.425 (0.762)</td>
<td>-0.155 (0.062)</td>
<td></td>
</tr>
<tr>
<td>Underemployed (10-19)</td>
<td>0.440 (0.791)</td>
<td>0.046 (0.578)</td>
<td></td>
</tr>
<tr>
<td>Underemployed (20-29)</td>
<td>1.376 (1.291)</td>
<td>0.086 (0.286)</td>
<td></td>
</tr>
<tr>
<td>Underemployed (30+)</td>
<td>0.540 (2.254)</td>
<td>0.019 (0.811)</td>
<td></td>
</tr>
<tr>
<td>Overemployed (1-9)</td>
<td>-3.902 (0.646)</td>
<td>-0.503 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Overemployed (10-19)</td>
<td>-2.982 (0.541)</td>
<td>-0.470 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Overemployed (20-29)</td>
<td>-3.492 (0.793)</td>
<td>-0.362 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Overemployed (30+)</td>
<td>-0.784 (0.901)</td>
<td>-0.071 (0.384)</td>
<td></td>
</tr>
<tr>
<td>Professional</td>
<td>-2.192 (0.261)</td>
<td>-0.780 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Associate Professional</td>
<td>-2.614 (0.526)</td>
<td>-0.447 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Tradesperson and Related Workers</td>
<td>-2.250 (0.568)</td>
<td>-0.364 (0.000)</td>
<td></td>
</tr>
<tr>
<td>Advanced Clerical and Service Workers</td>
<td>-2.403 (0.904)</td>
<td>-0.224 (0.008)</td>
<td></td>
</tr>
<tr>
<td>Intermediate Production and Transport Workers</td>
<td>-1.771 (0.657)</td>
<td>-0.239 (0.007)</td>
<td></td>
</tr>
<tr>
<td>Elementary Clerical, Sales and Service Workers</td>
<td>-3.485 (0.654)</td>
<td>-0.485 (0.000)</td>
<td></td>
</tr>
</tbody>
</table>

Akaike Information Criterion 7.06
Schwarz Bayesian Criterion 731837
Maximum Likelihood: Newton-Raphson -38075

Source: HILDA Wave 2.
The effect of job loss on mental health outcomes in both the panel model and the difference model appears perverse. This may reflect the impact of a small numbers problem, the role of the timing of the job loss and the problem of measurement on the job insecurity variable for those who lose their job. The variable job loss measures the transition from employment to unemployment between Waves in HILDA. We have set the change in job security to zero for this group. The coefficient on job loss was significant and positive. In other words, job loss appears to result in a rise in mental health outcomes not a fall. The difference equation results also give the same result. Likewise, people gaining work over the period after previously being unemployed in Wave 1, on average, experienced a fall in mental health outcomes.

Table 9  
Differenced Regression of Mental Health and Selected Change Variables

<table>
<thead>
<tr>
<th></th>
<th>Unstand. B</th>
<th>Stand. B</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>22.963</td>
<td>-</td>
<td>0.000</td>
</tr>
<tr>
<td>Change to Job Security</td>
<td>0.995</td>
<td>4.371</td>
<td>0.000</td>
</tr>
<tr>
<td>Job Loss</td>
<td>2.652</td>
<td>0.120</td>
<td>0.146</td>
</tr>
<tr>
<td>Change to Physical Function</td>
<td>0.062</td>
<td>0.094</td>
<td>0.000</td>
</tr>
<tr>
<td>Transition: Unemployment to Employment</td>
<td>-0.334</td>
<td>-4.357</td>
<td>0.000</td>
</tr>
<tr>
<td>Transition: Employment to Not in Labour Force</td>
<td>1.529</td>
<td>0.094</td>
<td>0.254</td>
</tr>
</tbody>
</table>

Source: HILDA Wave 1 and Wave 2.

6. Policy Implications and Conclusions

Over the last two decades, changes to the Australian labour market have seen a decline in job security. The decline in job security has prompted researchers to argue that it coincides with falling job satisfaction and possibly also the wellbeing of workers (Kelly, Evans and Dawkins, 1998; Dockery, 2003). Establishing a link between job security and mental health has generated a number of overseas studies in the area, but it remains a relatively new area of study in Australian economic research. The most recent Australian study was Dockery (2003), who provided evidence to support a link in cross-section regression of life satisfaction and labour market experiences.

The overall conclusion from our analysis is that job security plays an important role in the determination of both the level and changes in mental health outcomes of Australians. The analysis used a number of quantitative techniques to support this robust finding. The findings imply that there is a growing need to address mental health issues in the workplace.

Good mental health is not just the absence of poor mental health. This notion is important to our analysis, since good mental health results in a vitality for active living and, consequently, work and social contact. In respect to the work situation, absences of good mental health can lead to lower productivity levels. It may also affect desirable work skills of communication and leadership. A number of studies showed the effect of high levels of job insecurity on behavioural work outcomes, such as non-cooperation (Lim, 1996), lower trust (Ashford, Lee and Bobko, 1989) and concern for safety (Probst and Brubaker, 2001). From the results, it would therefore
be expected that these outcomes are also synonymous with poorer mental health conditions.

The adverse consequences of reductions in mental health stem also beyond the organisation. There are consequences to family and social networks, accumulated strain for the individual and, perhaps, in an economic sense a decline in value of human capital which may affect future employment outcomes.

Much remains to be learned about the causes, treatment and prevention of mental health problems (United States Department of Health and Human Services, 1999). Significant research has focused on the adverse health consequences of unemployment and job loss. Active policies designed to improve job matching and labour quality mitigate against such health concerns. The results of this suggest that just as deleterious to mental health as unemployment, is an insecure work environment. The lesson for employers is that they need also take the mental health of their employees as seriously as they would their physical safety.

References


Astbury, J. (1999), Gender and Mental Health, Key Centre for Women’s Health, University of Melbourne, Global Health Equity Initiative project, Australia.


Brown, S. Bulanda J. and Lee, G. (2003), ‘The Significance of Nonmarital Cohabitation: Marital Status and Mental Health Benefits among Middle-Aged and Older Adults’, Department of Sociology and Centre for Family and Demographic Research, Bowling Green State University, Vancouver.


