



Research report 2/2018

The characteristics of the underemployed and unemployed

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(Part II)

February 2018

This paper uses unit record data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Survey was initiated and is funded by the Australian Government Department of Social Services (DSS) and is managed by the Melbourne Institute of Applied Economic and Social Research (Melbourne Institute). The findings and views reported in this paper, however, are those of the author and should not be attributed to the Australian Government, DSS or the Melbourne Institute.

ISBN 978-0-6482759-1-6

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All research undertaken or commissioned by the Fair Work Commission for the Annual Wage Review 2017–18 has been agreed by the Minimum Wages Research Group (MWRG). The MWRG comprises a Chair from the Fair Work Commission, and representatives nominated by:

- Australian Chamber of Commerce and Industry (ACCI);
- Australian Industry Group (Ai Group);
- Australian Council of Social Service (ACOSS);
- Australian Council of Trade Unions (ACTU);
- Australian Government; and
- State and territory governments.

Part I of this report presents the work of David Rozenbes and Samantha Farmakis-Gamboni of the Fair Work Commission. An appropriate reference for Part I of this report is:

Rozenbes D & Farmakis-Gamboni S (2017), *The characteristics of the underemployed and unemployed*, Part I, Fair Work Commission Research Report 2/2017, February.

Part II presents the work of Inga Lass and Mark Wooden of the Melbourne Institute of Applied Economic and Social Research, The University of Melbourne. An appropriate reference for Part II of this report is:

Lass I & Wooden M (2018), *The characteristics of the underemployed and unemployed*, Part II, Fair Work Commission Research Report 2/2018, February.

The authors of Part I thank Inga and Mark and staff from the Commission for their comments.

A draft of this report was also workshopped with the MWRG prior to finalisation. The authors would like to thank the MWRG for its comments.

The contents of this report, however, remain the responsibility of the authors and the research has been conducted without the involvement of members of the Fair Work Commission.

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1 Overview

Underemployment is an additional measure of spare capacity to unemployment as these individuals are also willing to increase their current workforce participation through more work hours. It differs in that these individuals are already employed and therefore may have different characteristics to other workforce participants who are not employed. Together, these groups are referred to as labour force underutilisation. Reserve Bank of Australia (RBA) (2017: 40) explained that it is prudent to monitor all measures of underutilisation when assessing spare capacity as the downward pressure on wage growth by underemployed and unemployed workers differs.

Social inclusion through workforce participation is an objective of the *Fair Work Act 2009* (Cth) (ss 284(1)(c) and 134(1)(a)) that the Expert Panel for annual wage reviews (Expert Panel) must take into account in reviewing minimum wages and modern awards. The Expert Panel noted in the *Annual Wage Review 2016–17* decision that the recent increase in underemployment is likely to be related to the increase in part-time employment over the last 30 years as a result of structural changes in the Australian economy and that while the unemployment rate remains the best indicator of spare capacity in the labour market, the underemployment rate should continue to be monitored.¹

This report examines the characteristics of people these indicators of spare capacity represent. It aims to explore the characteristics of persons that are underemployed and whether their characteristics are similar with persons that are unemployed. It is also interesting to compare these characteristics with employed persons who do not prefer more hours of work (fully employed persons), particularly as this group includes part-time workers who may share similar characteristics to the underemployed. This report also benefits from a longitudinal analysis of the duration in underemployment and how individuals exit underemployment to provide further insight into the characteristics of workforce participation and spare capacity of the labour market.

The report uses data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey. The HILDA Survey asks all workers if they could choose the number of hours they work each week, taking into account the effect on income, would they prefer to work fewer, more or about the same number of hours.² The advantage of using the HILDA Survey is that, as a panel dataset, it tracks the same individuals over time, therefore enabling analysis of the duration and the transitions from underemployment. However, one limitation with the HILDA Survey is that it only captures whether individuals are underemployed once a year and any transition during the year cannot be assessed.³

The report is structured in two parts. The first part provides a literature review of underemployment from Australian studies, particularly those that have used the HILDA Survey to model characteristics. The analysis in the first part uses two models to compare the association of selected personal, household and employment characteristics with the labour market states. It finds many similarities in the personal and household characteristics of the underemployed with the

¹ [2017] FWCFB 3500 at para. 74.

² While the HILDA Survey also collects the preferred number of hours that individuals would like to work, this report focuses on the number of persons who are underemployed.

³ The HILDA Survey includes individuals' labour force status across each month, however, this does not capture hours preferences.

unemployed and some similarities between underemployed and part-time workers in employment characteristics.

The second part involves an analysis of the duration of underemployment and how underemployed workers transition out of underemployment. This assists with understanding whether underemployment is a transitory or long-lasting experience and whether exiting underemployment leads to positive (full employment) or negative (unemployment) transitions. This part looks at both the underemployed and a subset who prefer to work full-time hours. A key finding is that underemployment is a short-lived experience for most workers and that most workers who leave underemployment remained employed and obtain more working hours. The industry in which a worker is employed was found to be an important influence on the likelihood of exiting underemployment. However, some groups were more likely to have a high persistence in underemployment.

Part I: Characteristics of the underemployed and unemployed

2 Definitions and data

Underemployment, as defined by the Australian Bureau of Statistics (ABS) and in this study, can be referred to as time-related underemployment, or a situation where there is an insufficient volume of work (Wilkins and Wooden 2011a). This definition stems from the International Labour Organization (ILO) who defines an individual as underemployed if:

- they are willing to work additional hours;
- they are available to work additional hours; and
- they currently work less than a threshold of hours (such as full-time employment) (ILO (2014)).

The ILO explains that the latter criterion excludes full-time workers who, in their view, already work a “sufficient” number of hours. The ILO definition also does not refer to wage rates, so it is assumed that the preference for more hours is at the individuals’ market or current wage rate (Wilkins and Wooden 2011a).

There are some other considerations for the definition of underemployment for this report. One important difference between this definition of underemployment and official definitions of unemployment is that it does not require an individual to be *actively seeking* more hours. Wilkins and Wooden (2011a) explained that this definition leaves reasons for underemployment on the demand side. Supply side reasons could include poor health or lack of child care services. Further, the HILDA Survey only began capturing the availability of working additional hours from wave 10. This means that this criterion has not been included in the definition of underemployment in Part I. While the HILDA survey also identifies full-time employees who prefer to work additional hours, these employees have not been included in the definition of underemployed for this report and are considered to be fully employed. Therefore, the definition of underemployment used in Part I is an employee working part-time hours that is willing to work additional hours.⁴ Self-employed persons have not been included as underemployed in Part I of this report.

⁴ There is likely to be little difference by including those that prefer to work more hours but were not available. Data from the *Participation, Job Search and Mobility* catalogue showed that 95 per cent of those who preferred to work more hours in February 2017 were available to do so. Data from pooled waves 10 to 16 of the HILDA survey show that this was around 88 per cent of the underemployed.

The ABS definition used in the labour force survey also includes full-time employees who worked part-time hours in the reference week for economic reasons (such as being stood down or insufficient work being available) as being underemployed as they assume that these workers wanted to work full time in the reference week and were available to do so (ABS 2017a). However, underemployment in the HILDA Survey is based on employees' *usual* hours of work rather than a reference week, so these workers are not considered part-time employees for this analysis.

Part II of this report also considers a sub-group of the underemployed who prefer to work full-time hours. These individuals are described as involuntary part-time workers.

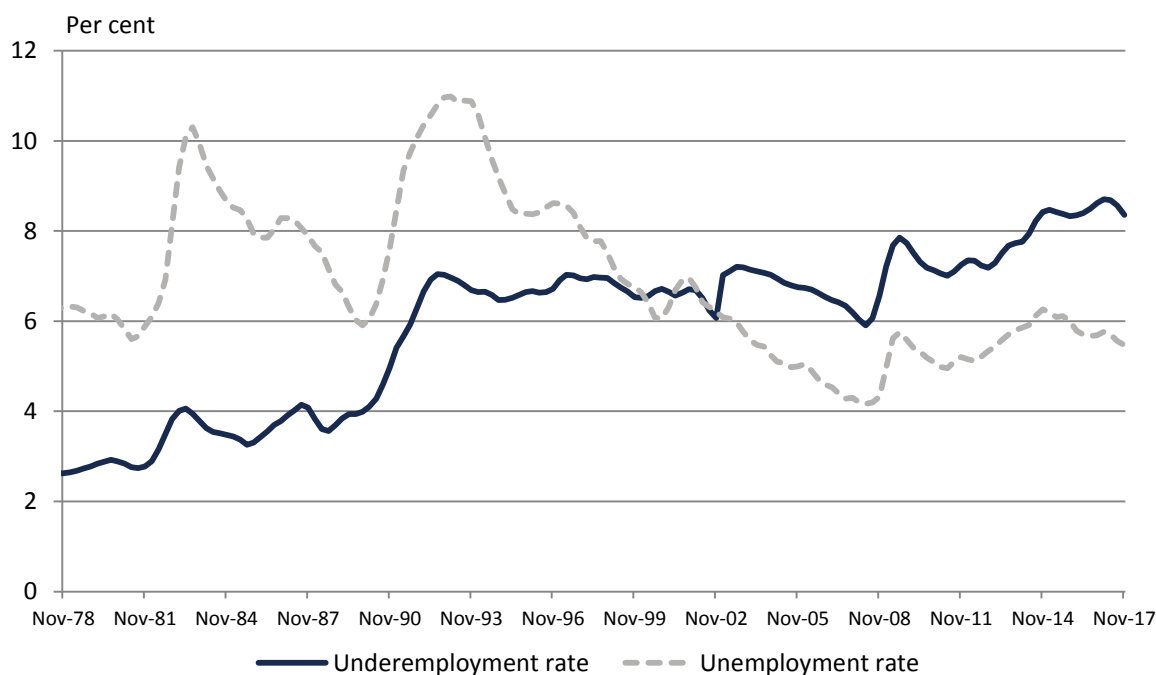
The ABS defines unemployment as persons not employed during the reference week who were available to work and had been actively looking for work at any time in the four weeks leading up to the reference week. This differs from the definition of unemployment in the HILDA Survey, which only considers those who did not work during the previous seven days.

The *Annual Wage Review 2016–17* decision stated that while the unemployment and underemployment rates had generally moved similarly since the mid-2000s, they had diverged somewhat over the most recent two years.⁵ This was also observed by the RBA (2017). The RBA stated that the growth in part-time employment can explain part of the reason for the divergence in the underemployment and unemployment rates and explained that underemployment rates are higher among groups of workers that are more likely to work part time, such as females and within industries that are more likely to employ part-time workers (RBA 2017: p. 38).

Figure 1 presents the unemployment and underemployment rates over time and shows that a break in the relationship between the unemployment and underemployment rates occurred in the early 1990s. From this period, the unemployment rate fell from around 11 per cent in 1993 to 4 per cent in 2008. In contrast, the underemployment rate was relatively stable, at between 6 and 7 per cent, during this same period. Since February 2003, the underemployment rate has been higher than the unemployment rate. Despite both following similar trends after 2008, from early 2015 the unemployment rate has declined while the underemployment rate has increased to be close to 9 per cent.

⁵ [2017] FWCFB 3500 at para. 30.

Figure 1: Underemployment and unemployment rates, November 1978 to November 2017



Note: Chart presents quarterly trend data as monthly data on the underemployment rate are only available from July 2014.

Source: ABS, *Labour Force, Australia, Dec 2017*, Catalogue No. 6202.0.

According to data from the Labour Force Survey, the average number of additional hours the underemployed workers would like to work has remained relatively steady since the mid-2000s at just under 15 hours per week with the RBA (2017) explaining that around half of underemployed workers prefer full-time employment. The RBA also noted that around half of underemployed workers were actively searching for additional hours in 2016 and around half preferred not to change their employer to find additional hours.

3 Literature review

This section reviews Australian studies of underemployment that use the HILDA Survey, a longitudinal survey that contains a rich list of variables that allows for analysis to include a range of factors associated with underemployment and other labour market states. This extends to personal, household and employment characteristics. The HILDA Survey was first conducted in 2001 and has since collected 16 waves of data (2001 to 2016).

Wilkins (2004) was the first study that used the HILDA Survey (Wave 1) to analyse the extent of underemployment and its association with income, welfare dependence and subjective well-being compare for the working age population (15–64 years). Wilkins found that there were more underemployed persons (defined as the difference between desired hours of work and actual hours for part-time workers) than unemployed persons. Underemployed persons preferred to work 13 extra hours per week, on average. Underemployment was found to be higher among young people, sole parents, those who had only 'completed high school', females aged 35–44 years and females in couple families with dependent children. The outcomes, modelled separately for males and females, found that underemployment is associated with a higher likelihood of family income

support receipt, a decrease in family equivalent income and lower life satisfaction. In each case the association was lower than with unemployment.

Wilkins (2006) extended the previous paper and compared the characteristics of underemployment with unemployment, other part-time employment (those who worked part time and were fully employed) and full-time employment. The paper found that there are common characteristics between the underemployed and unemployed, with some differences. This led to the conclusion that the characteristics of underemployment fall somewhere between the unemployed and working part time and being fully employed.

Casual employment was found to be associated with an increased probability of both, while differences between underemployment and other part-time employment were found in their association with industry division and occupation groups. There was a higher probability of underemployment associated with lower-skilled occupations and with working in the education and health industries for males, and manufacturing and personal services for females. The hourly wage was found to have a relatively small association with underemployment. The paper concluded that supply side factors were found to be associated with the probability of underemployment more than employment characteristics, although occupation and industry were also important characteristics.

Using the longitudinal nature of the HILDA Survey, some studies examined how work hour mismatches—when the preferred number of work hours does not equal actual hours worked—change over time. This could lead to either underemployment or overemployment.

Reynolds and Aletraris (2006) analysed the first two waves of the HILDA Survey to determine how work hour mismatches change over time and whether they are resolved through changes in actual or preferred hours. Work hour mismatches were found to be created and resolved through changes in *both* actual and preferred hours simultaneously, rather than only one or the other. The average change in *preferred* hours was found to be larger than the average change in actual hours, particularly for men who preferred to work fewer hours.

Using the first 5 waves of the HILDA Survey, Wooden and Drago (2009) assessed the persistence of work hour mismatches. Although not limited to part-time workers, the study found that around 46 per cent of workers who preferred to work more hours were satisfied with their hours one year later. This increased only incrementally to 57 per cent four years after the initial period. The authors concluded that work hour mismatches that do get resolved tend to be resolved relatively quickly, although for a substantial minority it persists.

Analysing the first 11 waves of the HILDA survey, Breunig et al. (2014) found that underemployed workers were satisfied with their work hours in later waves. The study compared the work hour preferences of workers between two consecutive waves by analysing the outcomes in the following wave for workers with a work hour mismatch in the initial wave. The study estimated that the average extra hours that underemployed workers would like to work was around 12 hours per week over the 11 waves.⁶ For both males and females who preferred to work more hours in the initial period, they were just as likely to be satisfied with their work hours as they were to prefer to work more hours in the following wave (probability of just over one-third for each).

Similar to Wooden and Drago, Breunig et al. also assessed how work hour mismatches are resolved. Only around one in eight workers resolved their work hour mismatch by increasing their

⁶ Overemployed workers preferred to work 14.3 fewer hours on average over the 11 waves.

actual hours and not changing their preferred hours, as would be expected if circumstances do not change. Results were found to be different between males and females, although the two most common ways to resolve work hour mismatches for both genders was to reduce preferred hours and increase actual hours, or to increase both preferred and actual hours.

The study also found that over half of underemployed workers who changed employers resolved their work hour mismatches. Around half of underemployed workers who did not change employers still preferred to work more hours, while around two in five became satisfied with their hours.

In a more recent study restricted to only part-time workers, Kler et al. (2017) compared the characteristics and determinants of the underemployed with other part-time workers (considered to be fully employed). The study found that females were less likely to be associated with underemployment while immigrants were more likely to be associated with underemployment. The results across age groups (10-year categories from 15–64 years) were suggested to reflect that young people may be underemployed only temporarily as they gain more work experience. Being a casual employee was also associated with an increased probability of being underemployed, as was working in a small firm, experiencing longer spells of unemployment, working in blue-collar occupations and having only received a diploma and/or certificate. The study also found that the gap between actual and preferred work hours was lower for females and couples but larger for immigrants, casual employees, those in small firms, those earning higher hourly wages and blue-collar occupations.

Some of these studies mentioned the limitations of using the HILDA Survey in analysing underemployment. Breunig et al. highlighted that transitions between labour market states within the year, that is, between survey periods, may not be captured. While changes in employment status can be identified within the year, this is not possible for underemployment, as changes in actual hours worked or in preferences of hours worked, are not captured within the year.

A further consideration is that information on the employer is limited and the only information collected on the workplace is industry, firm size and sector. The HILDA Survey, like all household-based surveys, is useful for measuring supply side characteristics but less so for measuring features of the demand side. In addition, seasonal factors may also effect responses depending on the time of the year in which the survey was completed (the HILDA Survey is usually completed across the second half of a year).

4 Modelling the characteristics

This chapter presents an analysis of the underemployed by comparing their characteristics with persons in other labour market states using two separate multinomial logit models. The labour market states are underemployed, unemployed, fully employed part time and employed full time. The analysis differs from previous studies by using more recent data (up to wave 16) and in its approach to recent studies, such as Kler et al.

In the first model, a comparison is made between the characteristics of the unemployed, underemployed and the fully employed—part-time and full-time employees who do not prefer to work extra hours—to determine differences between the characteristics of these groups. The characteristics examined in the first model include personal and household characteristics

measured across all 16 waves of the HILDA Survey.⁷ The second model compares the characteristics of the underemployed with other employees. This analysis differs from the first model in that it also incorporates employment characteristics, including method of setting pay. This variable has only been included in the HILDA Survey from wave 8, so the analysis is restricted to waves 8 to 16. In both models, self-employed workers are excluded and the samples are restricted to employees only.⁸

Box A: Interpreting logit models

A logit model estimates the impact of a change in the value of the explanatory variable on the probability of the dependent variable being observed. Multinomial logits are estimated where the dependent variable takes multiples values.

The mean marginal effects are discussed from estimating the multinomial logits. A positive marginal effect indicates that the association of the characteristic increases the probability of being in a labour market state when compared with the base category. The mean marginal effects sum to zero for each characteristic.

Examples from Model 1 (Table A3):

- A marginal effect of 0.160 indicates that males aged 25–34 years are associated with a higher probability of being employed full time compared with males aged 15–24 years, by 16 percentage points.
- A marginal effect of –0.048 indicates that males aged 25–34 years are associated with a lower probability of being employed part time compared with males aged 15–24 years, by 4.8 percentage points.

4.1 Factors associated with the likelihood of underemployment compared with the unemployment and full employment

This section compares the characteristics of the underemployed with the unemployed and fully employed (part-time and full-time employees) using a multinomial logit regression model, pooling all 16 waves of the HILDA survey. The model is estimated separately for males and females.

The dependent variable therefore takes four values: underemployed, unemployed, part-time (fully) employed and full-time employed. This enables an analysis of whether the underemployed (part-time employees who are willing to work additional hours) are more likely to resemble unemployed persons, part-time employees satisfied with their work hours or full-time employees.

Table A1 presents the sample sizes for each group across the 16 waves of the HILDA survey. The table shows a higher sample of underemployed individuals than unemployed across each wave. The large increase in the total sample from wave 11 is due to the addition of a top-up sample.⁹

⁷ Given that the same individuals are observed across waves, the cluster option is used in STATA.

⁸ Based on the variable on current employment status as reported in the HILDA Survey.

⁹ See Watson (2011).

The personal and household characteristics used in the model are described below:

- *Age* refers to employees of working age (15–64 years) grouped into 10-year categories.
- *Highest education level* records the highest level of education attained.
- *Family type* consists of seven categories: couples without children; couples with dependent child/ren; couples without dependent child/ren; lone parents with dependent child/ren; lone parents without dependent child/ren; lone persons; and other family types, such as multi-family households.
- *Area of residence* categorises individuals into living in a major city, regional or remote area.
- *Country of birth* groups individuals into whether they were born in Australia, another English speaking country, or a non-English speaking country.
- *Full-time student* identifies whether the respondent is currently studying full time, indicating whether this is the respondent's primary activity.
- *Work-limiting health condition* indicates whether the person was limited in the kind of work or other activities as a result of their physical health.
- *Wave* indicates in which year the response was provided.

Table A2 present descriptive statistics for the variables described above. The descriptive statistics show that a higher proportion of females are underemployed and employed part time than males.

The mean marginal effects, presented separately for males and females, are shown in Tables A3 and A4. The results show many similarities in the characteristics associated with underemployment and other labour market outcomes for males and females with some key differences.

The age profile was found to be associated with underemployment in similar ways to unemployment. Each age group was associated with a lower probability of underemployment and unemployment than the youngest age group (15–24 years). For males, older age group were also associated with a lower probability of being (fully) employed part time except for the oldest age group (55–64 years), while for females, each group was associated with a higher probability of being (fully) employed part time.

For highest education level, the main finding was that having lower education levels were associated with a higher probability of both underemployment and unemployment. For females, it was also associated with a higher probability of being (fully) employed part time.

Compared with couples with children, most family types were associated with a higher probability of underemployment and unemployment and a lower probability of being employed full time. Females in couple families or those with dependents were associated with a higher probability of underemployment and being (fully) employed part-time, while lone parents without dependents and lone persons were associated with a lower probability of being (fully) employed part time and a higher probability of being employed full time.

Living in a regional area was associated with a higher probability of underemployment and a lower probability of being employed full time, while living in a remote area was associated with a lower probability of underemployment among males. This may reflect the number or types of jobs or the amount of labour supply available.

Compared with persons born in Australia, those born in non-English speaking countries were associated with a higher probability of underemployment and unemployment and a lower probability of being (fully) employed part time and, for males, also being employed full time. Those born in other English speaking countries were associated with a higher probability of unemployment and being employed full time and a lower probability of being (fully) employed part time among females.

Being a full-time student was associated with a higher probability of underemployment, unemployment and part-time employment with a lower probability of being employed full time. This is not surprising as full-time employment is not likely to be the main objective of these employees while they are studying. Having a work-limiting health condition was also associated with a higher probability of underemployment, unemployment and part-time employment.

4.2 Factors associated with the likelihood of underemployment compared with the fully employed

This model includes an analysis of employment characteristics and restricts the sample to employees only. The dependent variable in model 2 takes three values, one for each of the labour market states—underemployed, (fully) employed part time and employed full time. This enables an analysis of whether the underemployed (part-time employees who are willing to work additional hours) are more likely to resemble part-time employees satisfied with their work hours or full-time employees. The sample for model 2 is estimated for waves 8 to 16 in order to incorporate method of setting pay which is only captured from wave 8. The model is also estimated separately for males and females.

In addition to the personal and household characteristics used in model 1, the following employment characteristics¹⁰ are considered in model 2:

- *Industry* refers to the Australian and New Zealand Standard Industrial Classification (ANZSIC) divisions.
- *Occupation* refers to the Australian and New Zealand Standard Classification of Occupations (ANZSCO) major groups.
- *Sector* refers to the private and public sector.
- *Business size* refers to the number of employees at the individuals' place of work. The categories selected are 1 to 19, 20 to 199 and 200+ employees.
- *Work schedule* refers to the employees' working hours, for example, regular, daytime or night shift.
- *Employment type* indicates whether the employee is employed on a permanent, casual or fixed-term basis.
- *Award* indicates whether the employee is paid the exact award rate. The remaining employees are grouped together.¹¹

¹⁰ The characteristics refer to the employee's main job.

¹¹ No adjustment has been made to public sector employees as has previously been suggested (see Wilkins and Wooden 2011b). This is based on the re-classification of public sector employees in New South Wales from collective agreement to award only in the 2016 Survey of Employee Earnings and Hours.

In addition to these variables, an indicator as to whether the employee was *previously unemployed* during the previous year has been included to assess whether those that move into employment are more likely to move straight into full employment or underemployment. Labour market transitions out of underemployment are explored in Part II.

Table B1 presents the sample sizes for each employment status from waves 8 to 16. Descriptive statistics for the characteristics in model 2 are presented in Table B2. The descriptive statistics show that while most males and females are employed full time, females are relatively more likely to be (fully) employed part time and underemployed.

Results of the multinomial logit for employment characteristics, presented in Tables B3 and B4, are discussed below. Many of the results for the personal and household characteristics resemble those in model 1. The employment characteristics tended to show that the characteristics of being underemployed had more similarities with the characteristics associated with being (fully) employed part time.

Older age groups were generally associated with a lower probability of underemployment and a higher probability of being (fully) employed part time compared with the youngest age group (15–24 years), particularly among females. For males, the oldest age group (55–64 years) was associated with a higher probability being (fully) employed part time and a lower probability of being employed full time.

For females, a higher level of education was generally associated with a lower probability of underemployment than the base category of Certificate III/IV and a higher probability of being (fully) employed part time. For males, there were no clear associations between highest level of education and any of the three labour market states, although some of the lower education levels were associated with a higher probability of being (fully) employed part time and a lower probability of being employed full time.

There was also no clear evidence of an association between family types and the three labour market states for males. However, females in a couple family or those with dependents were associated with a higher probability of underemployment and being (fully) employed part time. Lone parents without dependents, lone persons and those in other families were associated with a higher probability of being employed full time and a lower probability of being (fully) employed part time.

Living in a regional area was associated with a higher probability of underemployment, particularly for females, while living in a remote area was associated with a lower probability of underemployment. Again, this may be reflective of the number or types of jobs or the amount of labour supply available.

Persons born outside of Australia were associated with a higher probability of being employed full time and a lower probability of being (fully) employed part time, particularly for females. Being born in a non-English speaking country was also associated with a higher probability of underemployment.

As would be expected, full-time students were associated with a lower probability of being employed full time and a higher probability of being (fully) employed part time as these employees are more likely to be focusing on studying than employment. However, full-time students were associated with a higher probability of being underemployed for males and a lower probability for females. Having a work-limiting health condition was also associated with a higher probability of

being underemployed and (fully) employed part time and a lower probability of being employed full time.

Across industries, in many cases where the probability of underemployment was higher, the probability of being (fully) employed part time was also higher. These industries included Retail trade, Accommodation and food services; Education and training; and Health care and social assistance. RBA (2017) noted that underemployment is more prevalent in industries with a higher share of part-time workers. This finding was also the case across occupations.

Working in a medium or large business was associated with a lower probability of being underemployed and being (fully) employed part time. Kler et al. also found that employees in small firms are more likely to be underemployed.

Compared with employees who work a regular daytime shift, the remaining work schedules were generally associated with a higher probability of both underemployment and being (fully) employed part time.

Casual employees were also associated with a higher probability of being underemployed and (fully) employed part time compared with permanent employees. This would be expected as many casual employees work part-time hours. Both Wilkins (2006) and Kler et al. found that casual employees were associated with a higher probability of underemployment.

Award reliance was associated with a higher probability of underemployment and a lower probability of being employed full time, although the magnitudes are relatively small.

Being unemployed in the previous period was associated with a higher probability of being underemployed—for males, it was also associated with a lower probability of being employed full time and, for females, a lower probability of being (fully) employed part time. This would be expected as previous work history is likely to affect future work.

5 Discussion

Part I of this report set out to compare the characteristics of the underemployed with other labour market states.

The underemployment rate was observed to have diverged with the unemployment rate in the most recent two years, with part of the reason due to the growth in part-time employment. Appendix C shows that there have also been some shifts in the composition of underemployment over time. While the majority of underemployed workers are female or younger, the male proportion has been at its highest level in more recent years and the proportion of underemployment comprised of older workers has also increased. In addition, there has been a fall in the proportion of those with below high school qualifications and an increase for those with certain higher qualifications. Some of these shifts may be due to changes in the broader labour market or population

Model 1 compared the characteristics of the underemployed with the unemployed and fully employed (part-time and full-time employment). The findings suggest that, for many of the selected personal and household characteristics, underemployed workers have more in common with unemployed persons than fully employed workers.

Model 2 compared the characteristics of the underemployed with the fully employed (part-time and full-time employment) and found that, after including employment characteristics (and therefore excluding unemployed persons), the characteristics of underemployment are more similar with the

characteristic of being (fully) employed part time. This is not unexpected given that, by the definition adopted in this paper, underemployed workers are also employed part time.

The results across the two models suggest that underemployment is highest among the youngest age group. Kler et al. (2017) and Wilkins (2004) also found that younger people were more likely to be underemployed. Kler et al. suggested that young people are underemployed temporarily as they gain more work experience.

Individuals aged 55–64 years appeared to be satisfied with the number of part-time hours that they worked. This was also the case for some females in couple families or with dependents, while others still preferred to work more hours.

These findings suggest that an individual's personal and household characteristics are associated with their labour market state, that is, whether they are underemployed, unemployed, (fully) employed part time or employed full time. When an individual's employment characteristics are included, the results showed that the characteristics of those underemployed were similar to those who were (fully) employed part time. This is not unexpected as underemployed workers are, by definition, employed part time. This is particularly evident for industries and occupations.

It is also the case that unobserved characteristics could be associated with underemployment, that is, characteristics not included in the models. For example, an important characteristic for labour market analysis is wages, however, both Wilkins (2004) and Kler et al. (2017) did not find that wages were associated with underemployment. Wage levels may be partially captured in model 2 through the variable on award reliance which may be an indicator for low-paid workers. While this award reliance was found to be associated with a higher probability of underemployment, the magnitude was relatively small.

Another aspect of these characteristics is how they are associated with the amount of time spent in underemployment. The duration and exit out of underemployment are examined in Part II.

Part II—Duration of underemployment and mobility to alternative employment states

6 Introduction

Part II of this report adopts a longitudinal perspective with a specific focus on underemployment. Using data from the Household, Income and Labour Dynamics in Australia (HILDA) Survey, covering the period from 2001 to 2016, it investigates the questions of: how likely workers are to exit underemployment; how long the experience of underemployment lasts; and which employment states do workers enter when they exit underemployment.

Two different concepts of underemployment are used in this part of the report.

1. In the first definition the underemployed comprise all *part-time workers who prefer more hours* (and when the term *underemployed* is used in this report, it will be this group that is being referred to). Workers are defined as part-time if they usually work fewer than 35 hours per week in all jobs (including any paid or unpaid overtime). Underemployed (part-time) workers are then identified via a question asking survey respondents whether they would prefer to work fewer, about the same, or more hours, after taking into account how any changes in hours worked would affect their income. Workers who are not underemployed according to this broad definition are referred to as *fully employed*.
2. The second definition is narrower and includes only a subgroup of the underemployed as defined in (1). It comprises only those *part-time workers who prefer full-time working hours* (in the following: *involuntary part-time workers*). In the HILDA Survey, respondents who report that they would like to work fewer or more hours receive a subsequent question asking how many hours a week in total they would choose to work. Involuntary part-time workers are those part-time workers who would like to work 35 hours or more per week.

The HILDA Survey data are well suited for undertaking longitudinal analyses on underemployment. Not only can underemployed workers be identified according to the two concepts described above, but the HILDA Survey also collects a vast array of additional worker and job characteristics, which can be used to analyse exit out of underemployment in a multivariate fashion. Further, the long-run panel nature of the HILDA Survey enables the identification of both the duration of underemployment spells and transitions into other employment states. However, one caveat must be noted: comprehensive information on workers' employment situation, including whether workers are underemployed, is only available for the time of the annual interview. This has two consequences. First, the analysis must focus on transitions between employment states from one year to the next, and hence moves out of and back into underemployment between survey waves cannot be captured. Second, the duration of underemployment must be measured on a yearly scale (i.e., rounded up to full years), possibly resulting in an overstatement of underemployment durations.

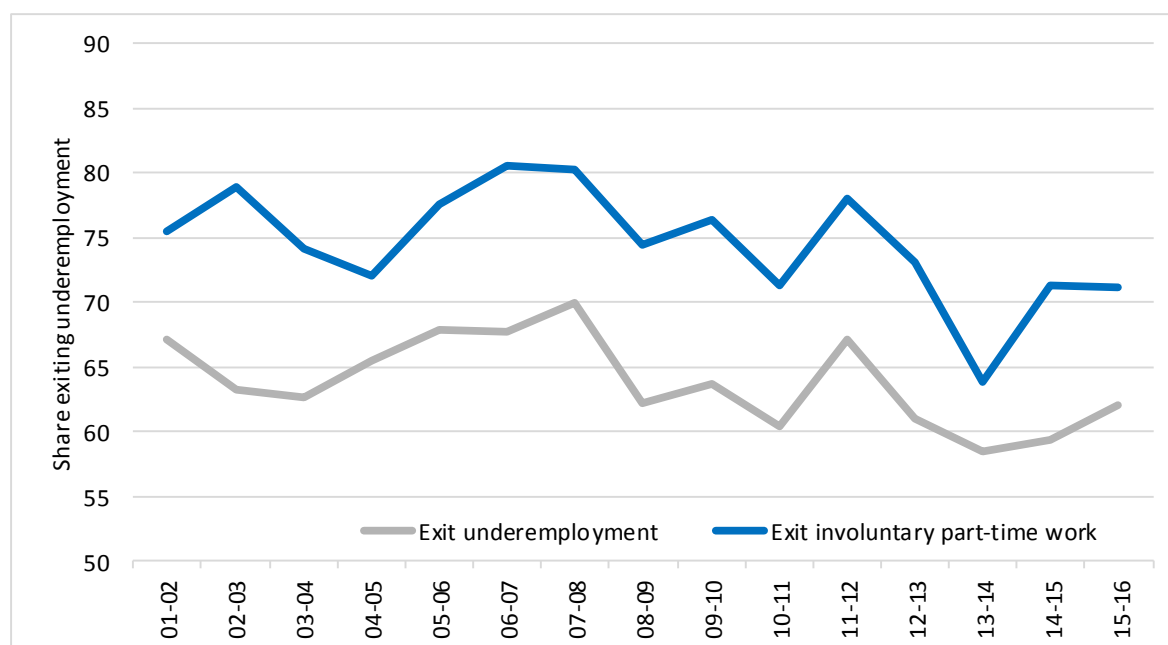
This part of the report is structured as follows: Section 7 investigates how the chances of exiting underemployment from one year to the next have evolved since 2001. Section 8 then analyses the different destination employment states of workers who leave underemployment, thereby addressing the question of how workers escape underemployment—by changing hours, preferences and/or employer, or by exiting employment. Section 9 moves beyond year-to-year transitions by looking at the overall duration of underemployment, and presents the hazard rate and cumulative incidence function of exiting underemployment after a certain underemployment duration. And Section 10 presents a multivariate analysis of the worker and job characteristics that

foster or impede exit from underemployment, distinguishing between becoming fully employed and leaving employment altogether. The report concludes with a summary of the key findings.

7 Trends in exiting underemployment 2001–2016

Figure 2 provides information on the share of underemployed workers who exit underemployment from one year to the next between 2001 and 2016. The sample for this step of the analysis comprises all underemployed workers (including the self-employed) who are observed in at least two consecutive waves of the HILDA Survey. To ensure representativeness of the Australian population, the data are weighted using the longitudinal weights provided.¹² We see that close to two-thirds (on average 64 per cent) of workers leave underemployment from one year to the next. This share is even higher for the sub-group of involuntary part-time workers, with three quarters (75 per cent) of those who are in involuntary part-time work in one year having left this state by the next year.

Figure 2: Yearly exit out of underemployment, per cent



Note: Underemployed workers: n=13,355; Involuntary part-time workers: n=5,849.

Source: Authors' calculations based on HILDA Survey General Release 16.

Figure 2 also shows that the rates of exiting underemployment and involuntary part-time work have varied over the observation period. While the share of workers exiting underemployment was rising prior to 2008 (or 2007 in the case of involuntary part-time work), exit rates subsequently fell, most likely as a consequence of the economic slowdown during the global financial crisis, and have remained at these lower levels since.

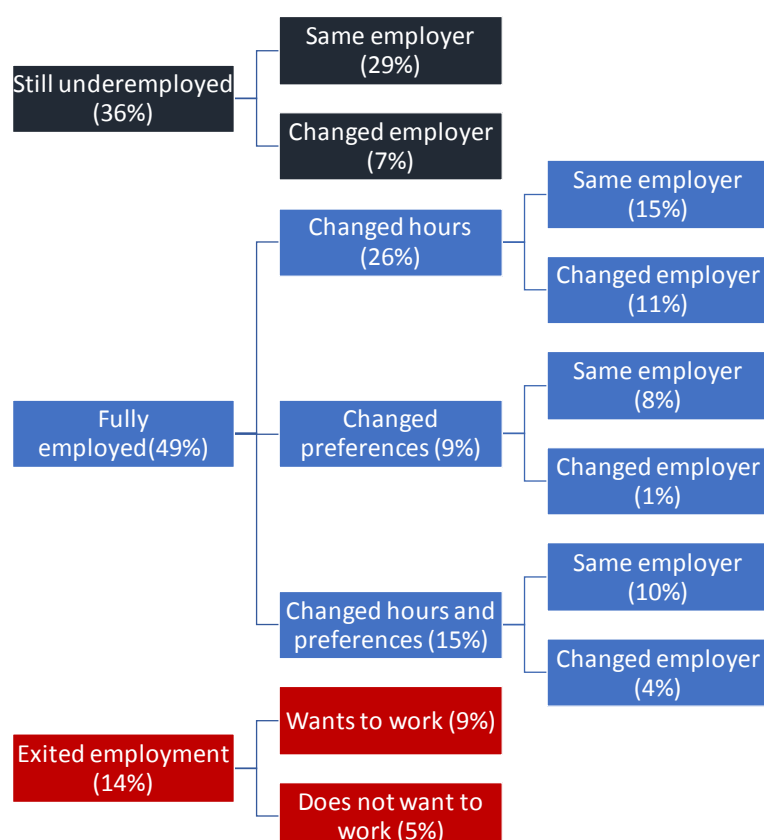
¹² The analysis uses responding person weights for balanced panels from each wave to the following wave. These weights adjust for attrition over time and ensure that key characteristics of the sample in the initial wave match those of the wider population. For more information about the construction of these weights, see Watson (2012).

8 Transition to alternative employment states

This section analyses the different destination employment states of underemployed workers. The sample is largely the same as used in Section 7, and the data are again weighted using longitudinal weights. A summary of the key patterns is provided in Figure 3, which shows the average year-to-year transitions between different employment states for underemployed workers. At the broadest level, we differentiate between three destination states of underemployed workers:

- i) *Still underemployed*: Workers who are still underemployed in the following year; i.e., they continue to be part-time workers who desire more hours.
- ii) *Fully employed*: Workers who have increased their hours to full-time (regardless of whether they might desire even more hours) and workers who are still working part-time but no longer desire additional hours.
- iii) *Exited employment*: Workers who are either unemployed or out of the labour force in the following year.

Figure 3: Destination states of underemployed workers



Note: n=13,332.

Source: Authors' calculations based on HILDA Survey General Release 16.

Of all workers observed as underemployed, one year later 36 per cent are still underemployed, 49 per cent are fully employed, and 14 per cent have left employment. Among those who are still underemployed, most (80 per cent) have remained with the same employer (representing 29 per

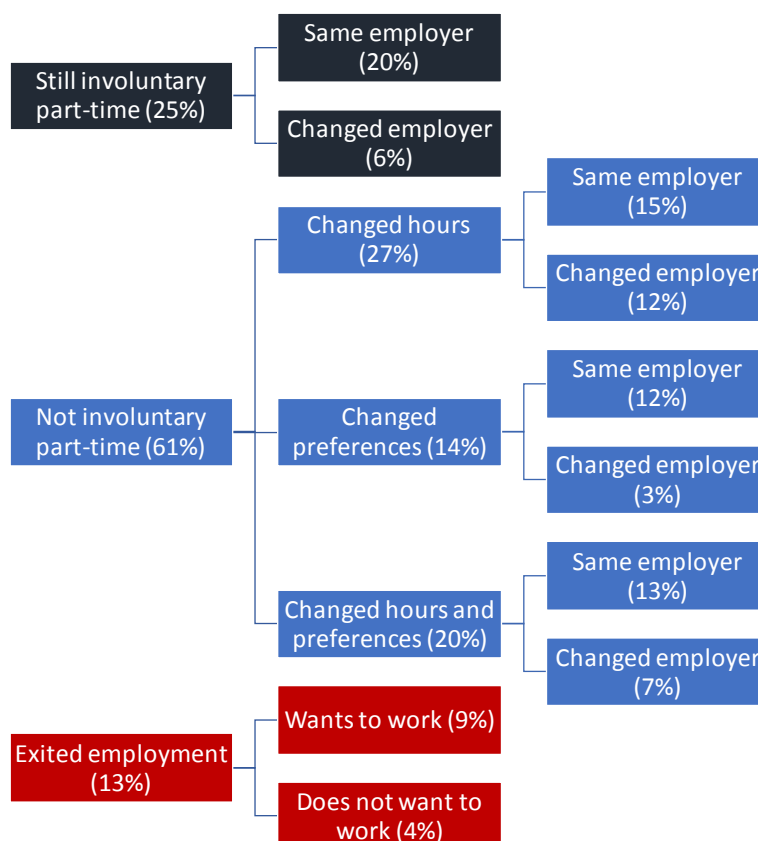
cent of all underemployed workers). Nevertheless, this still leaves a small fraction who, despite changing employer, were unable to escape underemployment (7 per cent of all underemployed workers).

With regard to those who are now fully employed, there are two ways through which this state is achieved: either additional working hours are obtained or working hours preferences change. It is the former that is most common. Around 26 per cent of all underemployed workers obtained a sufficient increase in their working hours so that one year later they were no longer underemployed. In contrast, just 9 per cent of the underemployed achieved a match by altering their preferences (effectively settling for a job providing part-time hours). However, there is also a relatively large group (15 per cent of all underemployed workers) that exited underemployment by adjusting both their actual and desired working hours.

These exits from underemployment into a fully employed state can take place within the same employer or alongside a change of employer. Exiting underemployment through a change of hours is more likely when workers remain with their employer (15 per cent) than when they change employer (11 per cent). Nevertheless, the relative likelihood of achieving preferences through increased hours is highest for those that change employers. Very few of those underemployed workers who exit underemployment by adjusting only their preferences do so while changing employer (just 1 per cent of all employees). Similarly, exiting underemployment via adjustment of both hours and preferences is more likely with the same employer (10 per cent), but also happens through a change of employer (4 per cent).

Finally, among those underemployed who one year later are no longer employed, the majority (65 per cent, or 9 per cent of all underemployed workers) still want to work (i.e., are either unemployed or marginally attached to the labour market). Only a minority leave employment and do not wish to work anymore (5 per cent of all underemployed).

Figure 4 provides the same summary of annual destination states, but for the subgroup of involuntary part-time workers. Again, we differentiate between three broad destination states. The first category, "*Still involuntary part-time*", covers workers who remain in part-time employment and continue to desire full-time hours. The second category, "*Not involuntary part-time*", comprises both workers who have increased their hours to full-time and those who are still working part-time but no longer desire full-time hours. Note that some of this group might still be underemployed. This is the case if they still prefer additional hours but the number of desired hours is less than full-time. As above, the third category, "*Exited employment*", includes those persons that exited involuntary part-time into unemployment or who left the labour force entirely.

Figure 4: Destination states of involuntary part-time workers

Note: n=5,841.

Source: Authors' calculations based on HILDA Survey General Release 16.

There are some notable differences to the pattern described above for the broader group of the underemployed. First, and as mentioned in Section 7, exit from involuntary part-time work is more frequent than exit from underemployment broadly defined, with only 25 per cent of involuntary part-time workers still in this situation one year later. Second, this higher rate of exit is not due to more workers exiting the workforce. Third, leaving involuntary part-time work is relatively more often achieved by reducing the desired number of working hours. Fourth, involuntary part-time workers are slightly more likely than underemployed workers in general to achieve a change in their situation by changing employers.

9 Duration of underemployment

In this section, we move beyond year-to-year transitions to analysing workers' entire underemployment spells and the chances of exiting underemployment by means of discrete-time event history analysis (e.g., Rabe-Hesketh & Skrondal, 2012, Chapter 14). This type of analysis follows workers from entry into underemployment to exit out of it, and requires that respondents are observed in at least three consecutive panel waves.¹³ The analysis is thus based on a smaller

¹³ Three panel waves are needed to observe both entry into underemployment and the outcome of at least one underemployment year; i.e., whether the person remains in underemployment or exits until the next year.

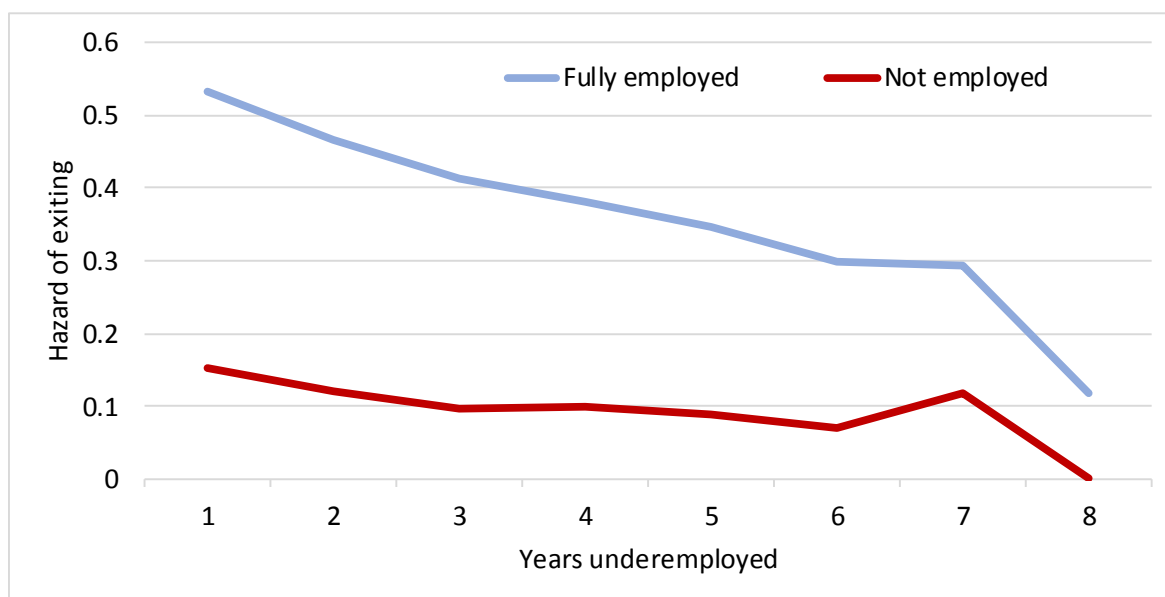
sample than in the previous sections. It should be noted that the unit of analysis is underemployment spells (rather than persons), and that some workers contribute more than one underemployment spell to this analysis (see Appendix Table D1).¹⁴ To ensure sufficient sample size, the analysis focuses on the broader definition of underemployment (i.e., part-time workers who want more hours). It is also important to differentiate between different ways of exiting underemployment, reflecting “positive” and “negative” labour market transitions. However, due to the reduced sample size, it is not possible to investigate all the destination states identified in Section 8 separately. This section distinguishes more broadly between:

- i) workers who make a “positive” transition by exiting underemployment into a fully employed state (i.e., workers who become full-time employed or remain part-time employed but no longer desire more hours); and
- ii) workers experiencing a “negative” transition by moving into non-employment (which comprises both becoming unemployed and leaving the labour force).

Figure 5 shows the discrete-time hazard of leaving underemployment into one of the two destination states (not controlling for any worker or job characteristics). The hazard designates the conditional probability of leaving underemployment provided the person is still underemployed up to that time point. Focusing on the first eight years of underemployment,¹⁵ it becomes apparent that the hazard of leaving underemployment into “full employment” is highest in the first year and then declines steadily: while 53 per cent of workers entering underemployment become fully employed within the next year, this applies to only 12 per cent of those who have already been underemployed for eight years. The hazard of exiting underemployment into non-employment is much lower than the hazard of becoming fully employment. Fifteen per cent of those who become underemployed head into non-employment within one year, with the hazard rate then declining, but not as steeply as the hazard rate of moving into full employment.

¹⁴ As a sensitivity check, the analysis was repeated using only the first underemployment spell observed for every worker. This approach yields very similar hazard rates.

¹⁵ The number of persons who are still underemployed is declining rapidly with underemployment duration. After eight years, there are only 17 underemployed workers left in the sample (see Appendix Table D2), and thus no results are presented for underemployment durations beyond this point.

Figure 5: Hazard of exiting underemployment

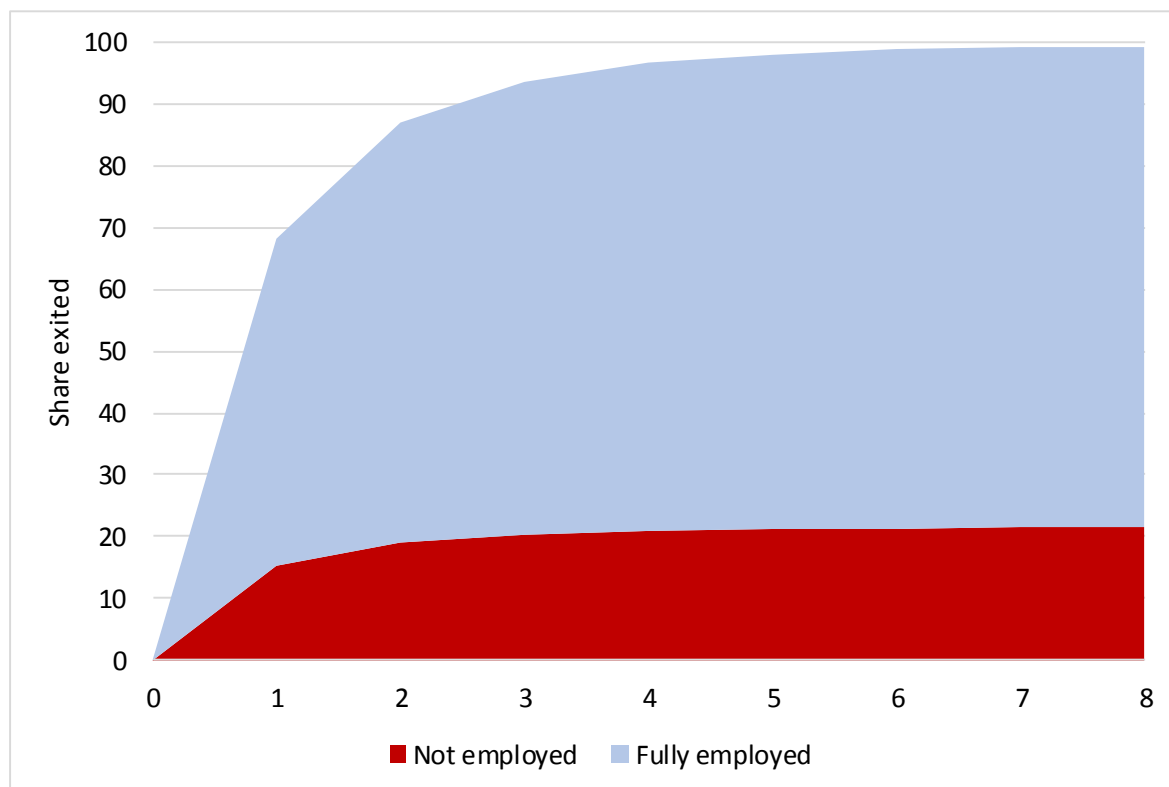
Note: n= 10,102 person-year observations from 7,061 underemployment spells.

Source: Authors' calculations based on HILDA Survey General Release 16.

Figure 6 shows how the hazard rates of exiting underemployment translate into the total share of workers having left underemployment. The figure represents the cumulative incidence function, which designates the marginal probability of experiencing an event. In this case, this relates to the marginal probability of exiting underemployment either into full employment or into non-employment after a certain period.

We can see that the share of workers who have exited underemployment increases steeply in the initial years of underemployment. One year following entry into underemployment, 68 per cent of workers will have left, with 53 per cent entering full employment and 15 per cent non-employment. Three years after entry, 94 per cent of workers will have left underemployment—73 per cent to full employment and 20 per cent to non-employment. The share of workers exiting underemployment increases to 98 per cent after five years and then approaches 100 per cent (99.4 per cent after eight years). Overall, eight years after entry into underemployment, 78 per cent of workers will have left to full employment and 21 per cent to non-employment.

Figure 6: Cumulative incidence function of exits from underemployment



Note: n= 10,102 person-year observations from 7,061 underemployment spells.

Source: Authors' calculations based on HILDA Survey General Release 16.

10 Factors associated with the likelihood of exit from underemployment

This section presents results from multivariate discrete-time event history analysis that identifies worker and job characteristics associated with the chances of exiting from underemployment. The sample is the same as in Section 9 (but minus observations with missing values on the additional variables included in the models). Table 1 presents results from two separate models:

- i) *Single Event Model* (Model 1), which estimates the impact of worker and job characteristics on exiting underemployment, regardless of the worker's destination state. The outcome, or event, variable is a binary variable identifying, for every year, whether the worker exits from underemployment or not. The estimation is conducted using binomial logistic regression.
- ii) *Competing Risks Model* (Model 2), which allows the magnitude of associations with these different worker and job characteristics to vary with the destination state by simultaneously analysing the hazard of exiting underemployment into full employment and of exiting into non-employment. This type of model is called a competing risks model because transitioning from underemployment into full employment is competing with transitioning from underemployment into non-employment: A worker who has made one of these transitions is no longer at risk of making the other transition. The event variable can take three values, indicating for every year whether the worker: (i) remains underemployed; (ii) leaves underemployment for full employment; or (iii) leaves underemployment for non-

employment. The estimation is conducted using multinomial logistic regression. The base category is remaining underemployed.

The models include various worker and job characteristics that have been investigated in previous studies of the incidence of underemployment (e.g., Abhayaratna, Andrews, Nuch, & Podbury, 2008; Campbell, 2008; Kler, Potia, & Shankar, 2017; Wilkins, 2007; Wooden, Warren, & Drago, 2009). Furthermore, a key feature of event history models is that they also include spell duration (in this case, years spent in underemployment) as an additional variable in the model, allowing us to investigate whether the likelihood of exiting underemployment varies with the time already spent in this state (net of observable worker and job characteristics). The time-in-underemployment variable is included in a linear form, which matches the roughly linearly declining hazard found in Section 9. Summary statistics for the variables included in the models can be found in Appendix Table D3. The results are presented as hazard ratios (see Box B for information about how to interpret these values).

BOX B: Interpreting Hazard Ratios

Hazard ratios designate the impact of a specific characteristic on the “hazard” (i.e., the conditional probability) of experiencing an event—in the present case, the impact of worker and job characteristics on the hazard of exiting underemployment.

In the case of metric variables (e.g., years underemployed, age, years with employer), hazard ratios indicate by what factor the hazard of exiting underemployment changes if the value of the variable increases by one unit. In the case of categorical variables (e.g., educational level, living with a partner, area of residence), hazard ratios indicate by what factor the hazard of exiting underemployment is increased/decreased for cases in this category compared to cases in the reference category.

Broadly speaking, a hazard ratio of 1 means that the variable has no effect on the hazard. In contrast, hazard ratios larger than 1 indicate a positive effect of the variable on the hazard, while hazard ratios between 0 and 1 indicate a negative effect. More precisely, hazard ratios can be interpreted as percentage changes by subtracting 1 and multiplying by 100.

Examples from Model 1 in Table 1:

- **Metric variable:** The hazard ratio of 0.77 for “years underemployed” indicates that with each additional year the worker has already been underemployed, the hazard of exiting this state declines by a factor of 0.77, or by 23%. This is calculated by:
 $(0.77 - 1) * 100 = -23$.
- **Categorical variable:** The hazard ratio of 1.16 for “live with partner” indicates that workers living with a partner have a 16% higher hazard of leaving underemployment than workers who do not have a partner in the household. This is calculated by:
 $(1.16 - 1) * 100 = 16$.

Table 1: Event history analysis of exit from underemployment

Characteristic	Model 1	Model 2	
	Single event	Fully employed	Not employed
Years underemployed	0.77 ^{***}	0.77 ^{***}	0.79 ^{***}
Male	1.07	1.13 ^{**}	0.89
Age	0.94 ^{***}	0.97 ^{***}	0.88 ^{***}
Age squared (divided by 10)	1.01 ^{***}	1.00 ^{**}	1.02 ^{***}
Educational level			
Postgraduate	1.27	1.28	1.19
Graduate Diploma / Certificate	1.16	1.19	1.00
Bachelor or Honours	1.15	1.17 [*]	1.08
Adv. Diploma or Diploma	1.12	1.15	1.01
Certificate III or IV (ref.)	1.00	1.00	1.00
Year 12	0.98	1.03	0.80 ^{**}
Year 11 or less	0.98	0.92	1.18 [*]
Full-time student	0.78 ^{***}	0.83 ^{**}	0.61 ^{***}
Live with partner	1.16 ^{***}	1.22 ^{***}	0.99
Age youngest child			
No child below 14 (ref.)	1.00	1.00	1.00
Youngest child 0-4	1.08	0.95	1.65 ^{***}
Youngest child 5-14	0.95	0.90	1.11
Area of residence			
Major cities (ref.)	1.00	1.00	1.00
Inner regional	0.94	0.95	0.92
Outer regional / Remote / Very remote	1.03	1.01	1.13
Work-limiting health condition	1.00	0.82 ^{***}	1.82 ^{***}
Origin			
Australia – Indigenous	0.96	0.83	1.43 ^{**}
Australia – Non-Indigenous (ref.)	1.00	1.00	1.00
Main English-speaking country	1.19 [*]	1.23 ^{**}	1.08
Other country	0.84 ^{**}	0.77 ^{***}	1.17
Speaks English less than very well	0.90	0.95	0.73
Employment type			
Permanent contract (ref.)	1.00	1.00	1.00
Fixed-term contract	0.94	0.90	1.25
Casual contract	0.85 ^{***}	0.76 ^{***}	1.42 ^{***}
Self-employed with employees	1.10	1.04	1.55 ^{**}
Self-employed without employees / Other arrangements	0.79 ^{***}	0.70 ^{***}	1.38 ^{**}
Years with employer / in current business	0.99	1.00	0.92 ^{***}
Years with employer / in current business squared (divided by 10)	1.00	1.00	1.02 ^{***}
Supervisory responsibilities	1.07	1.15 ^{***}	0.79 ^{***}
Member of trade union / employee association	0.85 ^{**}	0.89 [*]	0.71 ^{***}

The characteristics of the underemployed and unemployed

Characteristic	Model 1	Model 2	
	Single event	Fully employed	Not employed
Public sector	1.00	1.04	0.84
Occupation			
Managers	1.04	1.09	0.88
Professionals (ref.)	1.00	1.00	1.00
Technicians and trades workers	0.87	0.87	0.92
Community and personal service workers	0.79 ^{***}	0.79 ^{**}	0.83
Clerical and administrative workers	0.77 ^{***}	0.81 ^{**}	0.65 ^{***}
Sales workers	0.64 ^{***}	0.66 ^{***}	0.62 ^{***}
Machinery operators and drivers	0.73 ^{**}	0.76 [*]	0.67 [*]
Labourers	0.70 ^{***}	0.68 ^{***}	0.79
Industry			
Agriculture, forestry and fishing	0.78	0.74	0.90
Mining	1.72	2.13	0.48
Manufacturing (ref.)	1.00	1.00	1.00
Electricity, gas, water and waste services	1.05	1.11	0.84
Construction	1.07	1.05	1.21
Wholesale trade	0.71 [*]	0.64 ^{**}	0.94
Retail trade	0.65 ^{***}	0.65 ^{***}	0.67 ^{**}
Accommodation and food services	0.67 ^{***}	0.65 ^{***}	0.75
Transport, postal and warehousing	0.78	0.74 [*]	0.93
Information media and telecommunications	0.80	0.86	0.57
Financial and insurance services	0.99	0.96	1.12
Rental, hiring and real estate services	0.69	0.63 [*]	0.94
Professional, scientific and technical services	0.76 [*]	0.78	0.71
Administrative and support services	0.75 [*]	0.69 ^{**}	0.93
Public administration and safety	0.76	0.75	0.78
Education and training	0.65 ^{***}	0.64 ^{***}	0.70 [*]
Health care and social assistance	0.69 ^{***}	0.70 ^{**}	0.64 ^{**}
Arts and recreation services	0.66 ^{**}	0.66 ^{**}	0.64 [*]
Other services	0.64 ^{***}	0.61 ^{***}	0.72
Constant	16.84 ^{***}	9.10 ^{***}	9.57 ^{***}
n (person-year observations)	10,030	10,030	
n (spells)	6,988	6,988	
n (events)	6,432	5,044	1,388

Note: (i) Exponentiated coefficients. (ii) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (iii) The models also include thirteen year dummy variables. (iv) The area of residence variables are based on categories used by the ABS in summarising the remoteness of locations in Australia at the time of the 2011 Census (see ABS, 2013). (v) The employment type "Other arrangements" includes employees whose employment arrangements are not easily classifiable (e.g., persons working on commission) as well as unpaid family workers. (vi) The occupation groups used are the eight major occupation groups as defined in the Australian and New Zealand Standard Classification of Occupations, 2013. (vii) The industry groups used are the 19 industry divisions as defined in the Australian and New Zealand Standard Industrial Classification, 2006.

Source: Authors' calculations based on HILDA Survey General Release 16.

10.1 Effects of underemployment duration

The multivariate model confirms the key result from the previous section, namely that the hazard of exiting underemployment declines with time spent in underemployment. This applies both to the hazard of becoming fully employed and of moving into non-employment.

10.2 Effects of worker characteristics

There are several worker characteristics that impact on the hazard of exiting underemployment, but their effects often differ with the type of exit (i.e., into full employment or non-employment). To begin with, we find important gender differences in exiting underemployment. While men do not generally have a higher hazard of exiting underemployment than women, which can be seen from the respective hazard ratio (1.07), which is close to 1 and statistically insignificant, men are significantly more likely to make “positive” transitions; i.e., become fully employed: The hazard ratio of 1.13 implies that they have a 13 per cent higher hazard than women of making this transition. Additionally, men appear to be less likely than women to make “negative” transitions (i.e., exit into non-employment), though this effect is statistically insignificant. These results reflect, in part, women’s greater involvement in housework and care, potentially restricting their labour market availability, hours flexibility and regional mobility.

Turning to workers’ age, we see that the hazard ratio for the linear term is less than 1, and the hazard ratio for the quadratic term greater than 1 in all models. Taken together, this indicates a u-shaped relationship between age and the hazard of exiting underemployment (both into full employment and non-employment, but more pronounced for the latter). This means that the hazard of exiting underemployment is relatively high for young people and decreases with age, but then increases again for older workers. This finding is consistent with the notion that young workers change jobs relatively often while they are searching for a good job match, and are therefore more likely to leave jobs involving poor matches than more established, middle-aged workers. In contrast, older workers who are nearing retirement and hence whose attachment to the labour market may be weakening, may be particularly likely to leave employment if they are dissatisfied with their working hours.

Educational level also matters, with highly educated workers having relatively high hazards of exiting into full employment. For example, the statistically significant hazard ratio of 1.17 for workers with a Bachelor or Honours degree in Model 2 means that this group has a 17 per cent higher hazard of becoming fully employed than the reference group of workers who have completed Certificate level III or IV. In contrast, persons who completed Year 12 and did not go on to obtain a post-school qualification have a relatively low hazard of exiting into non-employment, while persons that left school prior to Year 12 have a relatively high hazard of exiting into non-employment. Very differently, persons that are still engaged in full-time study have a lower hazard of exiting underemployment than persons that are not in full-time education, and this applies to both destination states. This result reflects the limited labour market availability of persons combining employment with studies.

Persons who live with a partner have a higher hazard of exiting into full employment than single persons. As can be seen from an additional, gender-differentiated analysis (Appendix Table D4), this result only applies to men. This finding suggests that partnered men, as the designated breadwinners in their families, perhaps feel under more pressure than single men to take steps to achieve their desired working hours. In contrast, partnered women, who are more likely to be secondary earners in their household, are no more likely to exit underemployment than their single

counterparts. Workers with a young child have a higher hazard of exiting into non-employment than childless workers, suggesting that some workers will choose full-time caring over remaining (under)employed. In this case, the gender-differentiated analysis shows that this result only applies to women, who are usually the primary carers within families.

A work-limiting health condition does not affect the overall hazard of leaving underemployment. However, distinguishing between destination states shows that this null-result is due to two opposite effects offsetting each other: Workers with a work-limiting health condition have both a lower hazard of moving into full employment and a higher hazard of becoming non-employed than workers without a health condition. We see a similar pattern for Aboriginals and Torres Strait Islanders when compared to non-indigenous Australian-born workers (though only the hazard ratio for becoming non-employed is statistically significant). Very differently, workers born in the main English-speaking countries have a significantly higher hazard of becoming fully employed compared to non-indigenous Australian-born workers, while the opposite is true for workers born in other countries.

Finally, neither region of residence nor English-language proficiency impact significantly on the hazard of exiting underemployment.

10.3 Effects of job characteristics

There is also a range of job characteristics that are associated with the hazard of exiting underemployment and the specific destination state. Compared to employees on permanent contracts, casual employees and self-employed workers without employees¹⁶ have both lower hazards of becoming fully employed and higher hazards of becoming non-employed. Other self-employed workers (those with employees) also have a higher hazard of exiting into non-employment. Over most of the observable range of job tenures, tenure with the employer / in the current business exhibits a negative relation with the hazard of exiting into non-employment; i.e., the more time spent in the same job, the less likely to exit into non-employment. The impact of an additional year of tenure is strongest in the first years after job start, while an additional year has a decreasing impact for workers with longer tenure. Nevertheless, after very long tenures, the relationship reverses and an additional year in the same job is positively related to the hazard of exiting into non-employment. Unsurprisingly, supervisory responsibilities are connected to positive outcomes; i.e., a higher hazard of moving into full employment and a lower hazard of moving into non-employment compared to workers who do not supervise others. In contrast, being a member of a trade union or employee association is associated with remaining in underemployment, as these workers have lower hazards of exiting into both destination states than non-members. Unions thus seem to be effective in protecting workers from job loss, but they do not appear to be effective in securing workers the hours they wish to work. In contrast, sector (i.e., public or private) does not impact significantly on the hazard of exiting underemployment in the analysis presented in Table 1. However, the gender-differentiated analysis shows that men in the public sector have

¹⁶ The HILDA Survey offers two different ways of distinguishing between self-employed workers with and without employees. First, workers are directly asked whether they work for (i) an employer for wages or salary, (ii) in their own business with employees, (iii) in their own business with no employees or (iv) without pay in a family business. Second, workers are asked how many people are employed at their workplace and whether the business operates from one or more workplaces in Australia. These two approaches result in slightly different shares of workers being assigned to the two categories. The results presented here are primarily based on the second approach; i.e., workers' assessment of how many people work at their workplace and whether there are several workplaces within Australia. However, in an additional step the results were compared to a regression using the alternative measure. The results did not change notably and are thus not reported.

higher hazards of becoming fully employed than men in the private sector. Women in the public sector, in contrast, have lower hazards of becoming non-employed than their counterparts in the private sector.

There are also strong and significant associations with workers' occupation: compared to Professionals, all other occupations (with the exception of Managers) have both smaller hazards of obtaining full employment and of moving into non-employment, and in most cases the differences are statistically significant. A high occupational status thus provides workers with the power to obtain the working hours they desire. Similarly, industry is also correlated with the hazard of exiting, and especially the hazard of becoming fully employed. Compared with workers in Manufacturing, the hazard of moving into full employment is relatively low for workers in: Wholesale trade; Retail trade; Accommodation and food services; Rental, hiring and real estate services; Education and training; and Other services.

10.4 Extensions

As previously mentioned, the analysis was also repeated using separate models for men and women (see Appendix Table D4).

The multivariate model also facilitates investigation of whether the impact of underemployment duration on the hazard differs for different socio-demographic groups. When looking at all workers, the hazards of exiting into full employment and into non-employment are relatively large in the beginning and then decline steadily with the time already spent in underemployment. However, the relationship between time spent underemployed and the hazard might be different for different groups of workers. Some workers might have less opportunity to change their employment conditions than others and therefore take longer to adjust their working hours and exit underemployment. In this case, the hazard might not decline steadily after entry into underemployment but instead be rather flat over time or even increase with time. To investigate this, variables were added to Model 2 that interact spell duration with gender, educational level, and health condition.

- a) *Gender (Model 3)*: The hazard rate might evolve differently for women than for men over time given women's stronger involvement in housework and care and thus reduced labour market availability and flexibility.
- b) *Educational level (Model 4)*: Low-skilled workers might take longer to adjust their working hours given their relatively weak position in the labour market. To investigate this, we dichotomise the educational categories and distinguish between a low educational level (i.e., no post-school qualification or having only Certificate level I or II) and a high educational level.
- c) *Health condition (Model 5)*: Workers with a work-limiting health condition might have a lower hazard of exiting into full-employment given their limited labour market availability and a higher initial rate of exiting into non-employment given their health condition.

Table 2 presents the results for these extended models. For reasons of brevity, only the coefficients of interest are displayed. None of the interaction effects are statistically significant, suggesting that the duration of underemployment is related in similar ways to men's and women's, high and low-skilled, and healthy and health-restricted workers' chances of exiting underemployment.

Table 2: Interaction between underemployment duration and selected worker characteristics

Characteristic	Model 3 Gender		Model 4 Educational level		Model 5 Health condition	
	Fully Emp.	Not Emp.	Fully Emp.	Not Emp.	Fully Emp.	Not Emp.
Main Effects						
Years underemployed	0.78 ^{***}	0.82 ^{***}	0.75 ^{***}	0.77 ^{***}	0.77 ^{***}	0.81 ^{***}
Male	1.20 ^{**}	1.05				
Low education			0.81 ^{**}	0.93		
Health condition					0.78 ^{**}	2.10 ^{***}
Interaction Effects						
Years x Male	0.96	0.89				
Years x Low education			1.07	1.03		
Years x health condition					1.03	0.90

Note: Fully Emp. = Fully employed; Not Emp. = Not employed. The models additionally control for all other characteristics contained in Models 1 and 2.

Source: Authors' calculations based on HILDA Survey General Release 16.

11 Summary

The level of underemployment has risen considerably in Australia in recent years, attracting increasing attention from the public, researchers and politicians alike. But how significant the impact of underemployment is on workers depends on the extent to which underemployment is a transitory or long-lasting experience and whether it is overcome by workers through "positive" labour market transitions, such as increasing their working hours, or by more "negative" labour market transitions, such as exiting employment. More specifically, this part of the report has adopted a longitudinal perspective to investigate workers' chances of exiting underemployment, the duration of underemployment spells, and the destination employment states of workers who exit underemployment. Two definitions of underemployment were used: (i) part-time workers who wish to work more hours (underemployed workers in the broad sense); and (ii) part-time workers who wish to work full-time hours (involuntary part-time workers).

A key finding from the analysis is that underemployment is a short-lived experience for most workers. The year-to-year transitions have shown that close to two-thirds of those who are underemployed and three-quarters of those involuntarily part-time employed at one point in time will have exited this state within the following year. This result was supported by the duration analysis, which showed that almost 70 per cent of workers who become underemployed will leave this state again within the first year. While the chances of exiting underemployment are declining for those workers who have been underemployed for several years, virtually every worker eventually leaves underemployment (and the vast majority within five years). However, the chances of leaving underemployment have varied since the turn of the millennium, with exit rates improving until 2007 but declining afterwards and remaining at a lower level since.

Another positive result is that most workers leaving underemployment remain employed, rather than leaving employment altogether. Focusing on the results from the year-to-year transitions,

49 per cent of underemployed workers become fully employed each year, while 14 per cent leave employment. Summed over all underemployment spells, more than three-quarters of workers were fully employed and only around one in five workers were non-employed following the end of their underemployment spell.

Despite this overall positive picture, four results give some reason for concern. First, even though most underemployed workers experience positive labour market transitions, there is a minority of 9 per cent underemployed workers who are pushed out of employment but would still like to work, indicating problematic employment pathways for this subgroup of workers in the longer term. Second, among those workers who do obtain full employment, there is a considerable number who do not achieve their initially desired working hours. Instead, many either settle for the hours they have or achieve a compromise between initially desired and actual hours by simultaneously increasing actual working hours and decreasing desired hours. This group is particularly large among involuntary part-time workers. Third, many workers (have to) change their employer in order to achieve the desired working hours. Both this and the preceding finding are indicative of the provision of relatively low working-hours flexibility by many employers. And fourth, among those workers who change employers, there is a minority who can still not achieve the desired hours and remain underemployed despite the change of jobs.

Multivariate analysis provided insights into which groups of workers are particularly likely (or unlikely) to exit underemployment. Both worker as well as job characteristics were shown to be significantly associated with the likelihood of exiting underemployment. Workers with a work-limiting health condition, Indigenous Australians, migrants from non-main English-speaking countries, casual employees and the solo self-employed all stood out in that they had both a reduced likelihood of making “positive” labour market transitions into full employment and an increased likelihood of making “negative” transitions into non-employment. In contrast, men and workers with supervisory responsibilities have both a higher likelihood of positive transitions and a reduced likelihood of negative transitions. And middle-aged workers, full-time students, members of trade unions and employee associations, and workers in low-skilled occupations show a high persistence in underemployment, in the sense that both positive and negative labour market transitions are less likely for these groups. The specific industry in which a worker is employed also appears to be an important influence on workers’ likelihood of exiting underemployment.

Nevertheless, the key messages from this study are clear: underemployment is a transitory rather than permanent state for most workers, and most workers not only remain employed but also obtain increased working hours upon leaving underemployment.

Finally, it is important to recognise that this analysis has weaknesses. Most importantly, the measurement of underemployment duration in years rather than finer time units means that the analysis can only provide a broad impression of how transitory underemployment is. The collection of monthly data on underemployment would be required to measure underemployment duration with larger precision. Furthermore, the analysis has focused exclusively on workers’ destination states immediately (i.e., within the year) after leaving underemployment. Yet the data indicate that a considerable share of workers who succeed in leaving underemployment later moves back into this state. It is thus an important task for future research to provide further insights into the recurrence of underemployment.

12 Conclusion

This report has examined the characteristics of underemployed workers in two separate parts. The first part compared underemployed workers with unemployed persons and fully employed workers (both part-time and full-time employees) to provide further understanding of labour supply and spare capacity in the labour market. Two models were applied, with the first examining personal and household characteristics, and the second—more restricted model—incorporating employment characteristics. Underemployed workers were found to have similar personal and household characteristics with unemployed persons and similar employment characteristics with part-time workers. This may suggest that underemployed workers are a varied group.

In the second part, this report examined the duration and transitions of underemployed workers. A key finding was that underemployment is a short-lived experience for most workers with close to two-thirds of those who are underemployed and three-quarters of those involuntarily part-time employed at one point in time will have exited this state within the following year. Further, almost 70 per cent of workers who become underemployed will leave this state again within the first year and the vast majority leave within five years. Most workers who leave underemployment also remain employed. However, the analysis also found that some underemployed workers leave employment, while others that remain employed adjust their preferred hours or change employers. Others may remain underemployed despite changing employers.

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Appendix A—Part I: Model 1

Table A1: Sample sizes for model 1

Wave	Employed full time (No.)	Employed part time (No.)	Underemployed (No.)	Unemployed (No.)	Total (No.)
1	4633	1434	775	609	7451
2	4392	1397	779	516	7084
3	4409	1363	800	461	7033
4	4323	1400	709	413	6845
5	4570	1488	755	399	7212
6	4670	1544	745	432	7391
7	4761	1541	726	399	7427
8	4859	1580	653	392	7484
9	4885	1555	762	500	7702
10	4991	1572	777	530	7870
11	6376	2057	1063	646	10 142
12	6332	2049	992	724	10 097
13	6254	2035	1033	756	10 078
14	6201	2015	1177	750	10 143
15	6223	2060	1123	823	10229
16	6257	2036	1101	766	10160
	84 136	27 126	13 970	9116	134 348

Source: HILDA Survey, waves 1 to 16.

Table A2: Descriptive statistics, model 1, per cent

	Employed full time	Employed part time	Underemployed	Unemployed
<i>Gender</i>				
Male	77.0	9.3	7.3	6.4
Female	49.6	30.8	13.8	5.8
<i>Age</i>				
15–24 years	40.4	26.9	20.7	12.1
25–34 years	74.7	12.0	7.6	5.7
35–44 years	70.0	17.8	7.8	4.4
45–54 years	71.8	17.2	7.4	3.6
55–64 years	64.2	24.8	6.9	4.1
<i>Highest education level</i>				
Postgraduate (masters or doctorate)	79.5	11.0	5.4	4.1
Graduate diploma, graduate certificate	72.4	20.0	5.9	1.7
Bachelor or honours	72.7	17.1	7.2	3.0
Advanced diploma, diploma	70.0	18.1	8.2	3.8
Certificate III or IV	73.0	13.5	8.2	5.3
Year 12	55.3	23.0	14.9	6.9
Year 11 and below	48.9	26.3	14.0	10.9
<i>Family type</i>				
Couple without children	73.6	15.8	7.0	3.7
Couple with dependents	58.2	24.8	11.3	5.7
Couple with non-dependents	67.7	16.0	9.6	6.8
Lone parent with dependents	40.5	27.0	20.0	12.4
Lone parent without dependents	69.6	11.5	10.7	8.2
Lone person	75.2	11.6	7.5	5.7
Other families	65.0	13.2	12.0	9.9
<i>Area of residence</i>				
Major city	64.8	19.2	9.9	6.0
Regional	60.6	20.9	12.0	6.5
Remote	71.0	18.0	5.8	5.2
<i>Country of birth</i>				
Australia	62.4	20.9	10.8	5.9
Other English speaking	72.0	16.3	6.7	5.0
Non-English speaking	66.2	15.3	10.6	7.9
<i>Previously not in the labour force</i>				
No	67.2	18.9	9.7	4.1
Yes	32.2	25.9	16.6	25.3
<i>Full-time student</i>				
No	70.2	16.1	8.5	5.2
Yes	11.9	48.4	25.7	14.1
<i>Work limiting health condition</i>				
No	64.5	19.9	10.3	5.4
Yes	55.0	23.5	12.5	9.0
Total	63.9	19.6	10.4	6.1

Note: Rows sum to 100. Data are weighted.

Source: HILDA survey, pooled waves 1 to 16.

Table A3: Results for model 1, males

	Employed full time	Employed part time	Underemployed	Unemployed
Age (Base = 15–24 years)				
25–34 years	0.160*** (0.012)	–0.048*** (0.006)	–0.072*** (0.010)	–0.040*** (0.008)
35–44 years	0.175*** (0.014)	–0.043*** (0.008)	–0.086*** (0.012)	–0.046*** (0.007)
45–54 years	0.178*** (0.013)	–0.031*** (0.008)	–0.089*** (0.010)	–0.057*** (0.007)
55–64 years	0.056*** (0.016)	0.082*** (0.012)	–0.085*** (0.010)	–0.053*** (0.008)
Highest education level (Base = Certificate III or IV)				
Postgraduate	0.010 (0.015)	–0.025** (0.011)	0.008 (0.011)	0.007 (0.008)
Graduate diploma, graduate certificate	0.006 (0.015)	0.006 (0.013)	–0.003 (0.013)	–0.009 (0.006)
Bachelor or honours	–0.011 (0.014)	–0.003 (0.011)	0.007 (0.009)	0.007 (0.006)
Advanced diploma, diploma	0.010 (0.011)	–0.029*** (0.008)	–0.001 (0.006)	0.020*** (0.006)
Year 12	–0.052*** (0.011)	0.005 (0.008)	0.028*** (0.007)	0.019*** (0.005)
Year 11 and below	–0.089*** (0.013)	–0.011 (0.008)	0.030*** (0.008)	0.069*** (0.008)
Family type (Base = Couple without children)				
Couple with dependents	–0.002 (0.007)	–0.003 (0.005)	–0.001 (0.005)	0.006 (0.004)
Couple with non-dependents	–0.023* (0.013)	–0.012 (0.009)	0.008 (0.009)	0.027*** (0.009)
Lone parent with dependents	–0.116*** (0.017)	0.026*** (0.010)	0.028*** (0.009)	0.062*** (0.010)
Lone parent without dependents	–0.064*** (0.021)	–0.021 (0.015)	0.027** (0.011)	0.058*** (0.013)
Lone person	–0.031*** (0.009)	0.002 (0.007)	0.003 (0.006)	0.026*** (0.005)
Other families	–0.081*** (0.020)	0.000 (0.012)	0.036*** (0.013)	0.046** (0.023)
Area of residence (Base = Major city)				
Regional	–0.021** (0.008)	0.004 (0.006)	0.014*** (0.005)	0.003 (0.005)
Remote	0.033 (0.032)	–0.005 (0.015)	–0.028** (0.011)	0.000 (0.021)
Country of birth (Base = Australia)				
Other English speaking	0.005 (0.014)	–0.005 (0.012)	–0.010 (0.007)	0.010 (0.011)
Non-English speaking	–0.052*** (0.013)	–0.014** (0.006)	0.032*** (0.011)	0.033*** (0.009)
Full-time student	–0.546*** (0.015)	0.369*** (0.018)	0.116*** (0.011)	0.060*** (0.010)
Work-limiting health condition	–0.107*** (0.010)	0.030*** (0.007)	0.030*** (0.007)	0.047*** (0.006)
Wave	–0.002*** (0.001)	0.000 (0.000)	0.002*** (0.000)	0.001 (0.000)

Note: Standard errors in brackets below. Statistically significance at the *0.10, **0.05 and ***0.01 level.

Source: HILDA survey, pooled waves 1 to 16.

Table A4: Results for model 1, females

	Employed full time	Employed part time	Underemployed	Unemployed
Age (Base = 15–24 years)				
25–34 years	0.040*** (0.013)	0.066*** (0.010)	–0.086*** (0.008)	–0.020** (0.008)
35–44 years	0.008 (0.015)	0.125*** (0.012)	–0.084*** (0.009)	–0.049*** (0.009)
45–54 years	0.011 (0.014)	0.141*** (0.010)	–0.091*** (0.009)	–0.061*** (0.007)
55–64 years	–0.122*** (0.018)	0.306*** (0.015)	–0.114*** (0.010)	–0.070*** (0.007)
Highest education level (Base = Certificate III or IV)				
Postgraduate	0.055*** (0.019)	–0.057 (0.017)	–0.016*** (0.011)	0.018* (0.009)
Graduate diploma, graduate certificate	0.006 (0.020)	0.007 (0.017)	–0.008 (0.011)	–0.005 (0.005)
Bachelor or honours	–0.027 (0.020)	–0.004 (0.017)	0.016 (0.010)	0.015*** (0.006)
Advanced diploma, diploma	–0.110*** (0.015)	0.008 (0.014)	0.062*** (0.008)	0.040*** (0.007)
Year 12	–0.088*** (0.016)	0.022* (0.013)	0.046*** (0.008)	0.020*** (0.007)
Year 11 and below	–0.168*** (0.018)	0.040*** (0.015)	0.054*** (0.008)	0.074*** (0.007)
Family type (Base = Couple without children)				
Couple with dependents	–0.259*** (0.011)	0.211*** (0.009)	0.044*** (0.006)	0.003 (0.005)
Couple with non-dependents	–0.084*** (0.019)	0.048*** (0.017)	0.022* (0.011)	0.014 (0.014)
Lone parent with dependents	–0.189*** (0.015)	0.065*** (0.012)	0.085*** (0.010)	0.039*** (0.007)
Lone parent without dependents	0.018 (0.021)	–0.055*** (0.016)	0.024* (0.014)	0.014 (0.009)
Lone person	0.047*** (0.013)	–0.065*** (0.010)	0.007 (0.007)	0.011* (0.006)
Other families	–0.014 (0.022)	–0.012 (0.019)	0.008 (0.011)	0.018** (0.009)
Area of residence (Base = Major city)				
Regional	–0.054*** (0.011)	0.012 (0.009)	0.035*** (0.007)	0.007* (0.004)
Remote	0.026 (0.044)	0.005 (0.035)	–0.028 (0.021)	–0.004 (0.012)
Country of birth (Base = Australia)				
Other English speaking	0.028* (0.017)	–0.041*** (0.016)	–0.014 (0.010)	0.027** (0.011)
Non-English speaking	0.024 (0.018)	–0.104*** (0.014)	0.024** (0.011)	0.055*** (0.013)
Full-time student	–0.434*** (0.009)	0.386*** (0.012)	0.024*** (0.008)	0.025*** (0.008)
Work-limiting health condition	–0.083*** (0.010)	0.013 (0.009)	0.031*** (0.007)	0.039*** (0.006)
Wave	0.000 (0.001)	–0.001** (0.001)	0.001** (0.001)	0.001 (0.000)

Note: Standard errors in brackets below. Statistically significance at the *0.10, **0.05 and ***0.01 level.

Source: HILDA survey, pooled waves 1 to 16.

Appendix B—Part I: Model 2

Table B1: Sample sizes, model 2

Wave	Employed full time (No.)	Employed part time (No.)	Underemployed (No.)	Total (No.)
8	4859	1580	653	7092
9	4885	1555	762	7202
10	4991	1572	777	7340
11	6376	2057	1063	9496
12	6332	2049	992	9373
13	6254	2035	1033	9322
14	6201	2015	1177	9393
15	6223	2060	1123	9406
16	6257	2036	1101	9394
	52 378	16 959	8681	78 018

Source: HILDA Survey, waves 8 to 16.

Table B2: Descriptive statistics for Model 2, per cent

	Employed full time	Employed part time	Underemployed
<i>Personal and family characteristics</i>			
<i>Gender</i>			
Male	81.7	10.3	8.0
Female	52.9	32.5	14.6
<i>Age</i>			
15–24 years	44.0	31.2	24.8
25–34 years	79.3	12.7	8.0
35–44 years	73.4	18.3	8.3
45–54 years	74.1	18.0	7.9
55–64 years	67.5	25.3	7.2
<i>Highest education level</i>			
Postgraduate (masters or doctorate)	82.3	11.9	5.8
Graduate diploma, graduate certificate	73.1	20.7	6.2
Bachelor or honours	74.5	18.3	7.3
Advanced diploma, diploma	72.3	19.3	8.4
Certificate III or IV	75.2	15.3	9.6
Year 12	58.4	24.9	16.7
Year 11 and below	53.5	30.3	16.3
<i>Family type</i>			
Couple without children	76.0	16.7	7.4
Couple with dependents	61.9	26.2	11.9
Couple with non-dependents	71.3	17.8	11.0
Lone parent with dependents	46.7	30.6	22.7

The characteristics of the underemployed and unemployed

	Employed full time	Employed part time	Underemployed
Lone parent without dependents	72.8	14.1	13.2
Lone person	79.7	12.7	7.6
Other families	72.7	13.0	14.4
<i>Area of residence</i>			
Major city	68.7	20.5	10.7
Regional	64.3	22.8	12.9
Remote	77.4	17.3	5.4
<i>Country of birth</i>			
Australia	65.7	22.7	11.6
Other English speaking	76.3	17.0	6.7
Non-English speaking	72.3	15.9	11.8
<i>Full-time student</i>			
No	73.7	17.2	9.1
Yes	14.8	55.4	29.8
<i>Work-limiting health condition</i>			
No	68.0	21.1	11.0
Yes	59.3	26.7	14.0
Employment characteristics			
<i>Industry</i>			
Agriculture, forestry and fishing	72.8	15.1	12.0
Mining	95.2	3.9	0.9
Manufacturing	86.1	8.6	5.3
Electricity, gas, water and waste services	92.6	5.3	2.1
Construction	89.6	6.2	4.3
Wholesale trade	84.8	10.9	4.2
Retail trade	42.3	34.3	23.4
Accommodation and food services	31.4	38.3	30.4
Transport, postal and warehousing	80.6	11.9	7.5
Information media and telecommunications	78.8	15.3	5.9
Financial and insurance services	84.5	12.1	3.4
Rental, hiring and real estate services	76.4	14.9	8.6
Professional, scientific and technical services	80.3	14.5	5.2
Administrative and support services	58.8	24.7	16.5
Public administration and safety	86.6	9.8	3.6
Education and training	59.3	29.1	11.7
Health care and social assistance	54.8	33.0	12.1
Arts and recreation services	50.5	28.0	21.5
Other services	70.6	17.4	12.0
<i>Occupation</i>			
Managers	90.9	7.2	1.9
Professionals	75.3	19.1	5.6
Technicians and trades workers	86.6	8.6	4.8
Community and personal service workers	43.1	35.0	21.9
Clerical and administrative workers	68.8	23.6	7.6
Sales workers	35.9	38.1	26.0

The characteristics of the underemployed and unemployed

	Employed full time	Employed part time	Underemployed
Machinery operators and drivers	84.9	8.1	7.1
Labourers	50.0	26.5	23.6
<i>Sector</i>			
Private	66.7	20.9	12.5
Public	71.5	21.5	7.0
<i>Business size</i>			
1 to 19	59.9	24.8	15.4
20 to 199	68.6	20.9	10.5
200+	79.4	15.2	5.4
<i>Current work schedule</i>			
Regular daytime shift	73.1	18.5	8.4
Regular evening shift	28.5	42.8	28.7
Regular night shift	47.5	30.1	22.5
Rotating shift	64.9	22.4	12.8
Irregular schedule	45.0	31.7	23.3
Other	46.9	26.5	26.6
<i>Employment type</i>			
Permanent	80.5	14.6	4.9
Fixed	78.0	15.3	6.8
Casual	24.4	43.1	32.5
<i>Method of setting pay</i>			
Other	75.3	17.1	7.7
Award	50.4	30.3	19.3
<i>Previously unemployed</i>			
No	69.8	20.8	9.5
Yes	49.4	23.7	26.9
Total	67.8	21.0	11.2

Note: Rows sum to 100. Data are weighted.

Source: HILDA Survey, pooled waves 8 to 16.

Table B3: Results of Model 2, males

	Employed full time	Employed part time	Underemployed
Age (Base = 15–24 years)			
25–34 years	0.047*** (0.009)	–0.015** (0.007)	–0.032*** (0.009)
35–44 years	0.030** (0.011)	–0.005 (0.008)	–0.025** (0.012)
45–54 years	0.024** (0.010)	0.013 (0.010)	–0.037*** (0.010)
55–64 years	–0.048*** (0.013)	0.101*** (0.012)	–0.053*** (0.009)
Highest education level (Base = Certificate III or IV)			
Postgraduate	0.011 (0.013)	–0.009 (0.012)	0.001 (0.014)
Graduate diploma, graduate certificate	0.003 (0.011)	–0.003 (0.014)	0.000 (0.012)
Bachelor or honours	0.001 (0.010)	0.010 (0.010)	–0.010 (0.008)
Advanced diploma, diploma	–0.022 (0.014)	0.028** (0.012)	–0.006 (0.009)
Year 12	–0.022** (0.009)	0.018** (0.008)	0.004 (0.006)
Year 11 and below	–0.017* (0.010)	0.009 (0.009)	0.008 (0.008)
Family type (Base = Couple without children)			
Couple with dependents	–0.000 (0.006)	0.003 (0.006)	–0.002 (0.005)
Couple with non-dependents	0.001 (0.010)	–0.017* (0.009)	0.016 (0.010)
Lone parent with dependents	–0.038*** (0.013)	0.022** (0.011)	0.016* (0.010)
Lone parent without dependents	–0.015 (0.014)	–0.008 (0.018)	0.023* (0.013)
Lone person	0.006 (0.009)	0.000 (0.008)	–0.006 (0.008)
Other families	0.001 (0.012)	–0.020 (0.012)	0.019 (0.012)
Area of residence (Base = Major city)			
Regional	0.004 (0.007)	–0.006 (0.006)	0.001 (0.006)
Remote	0.034 (0.024)	–0.006 (0.020)	–0.027* (0.016)
Country of birth (Base = Australia)			
Other English speaking	–0.000 (0.012)	0.006 (0.013)	–0.006 (0.010)
Non-English speaking	0.004 (0.010)	–0.022*** (0.007)	0.018* (0.011)

The characteristics of the underemployed and unemployed

	Employed full time	Employed part time	Underemployed
Full-time student	-0.290*** (0.021)	0.266*** (0.021)	0.023** (0.010)
Work-limiting health condition	-0.036*** (0.008)	0.017** (0.008)	0.018** (0.007)
Industry (Base = Agriculture, forestry and fishing)			
Mining	0.018 (0.026)	0.036 (0.026)	-0.054*** (0.010)
Manufacturing	0.017 (0.014)	-0.004 (0.013)	-0.013 (0.010)
Electricity, gas, water and waste services	0.025 (0.017)	-0.008 (0.016)	-0.017 (0.016)
Construction	0.021 (0.014)	-0.003 (0.012)	-0.017* (0.010)
Wholesale trade	-0.008 (0.018)	0.023 (0.017)	-0.015 (0.012)
Retail trade	-0.120*** (0.020)	0.073*** (0.015)	0.046*** (0.013)
Accommodation and food services	-0.108*** (0.022)	0.075*** (0.017)	0.033*** (0.013)
Transport, postal and warehousing	-0.025 (0.016)	0.022 (0.016)	0.003 (0.012)
Information media and telecommunications	-0.035* (0.019)	0.020 (0.019)	0.015 (0.014)
Financial and insurance services	-0.018 (0.027)	-0.007 (0.029)	0.025 (0.017)
Rental, hiring and real estate services	0.008 (0.027)	0.001 (0.029)	-0.009 (0.017)
Professional, scientific and technical services	-0.064*** (0.018)	0.022 (0.017)	0.042*** (0.014)
Administrative and support services	-0.090*** (0.022)	0.058** (0.023)	0.032** (0.015)
Public administration and safety	-0.033* (0.019)	0.013 (0.016)	0.021 (0.014)
Education and training	-0.155*** (0.023)	0.036** (0.018)	0.119*** (0.022)
Health care and social assistance	-0.124*** (0.022)	0.062*** (0.019)	0.062*** (0.016)
Arts and recreation services	-0.098*** (0.022)	0.054*** (0.019)	0.045*** (0.013)
Other services	-0.049** (0.021)	0.044** (0.018)	0.005 (0.013)
Occupation (Base = Managers)			
Professionals	-0.059*** (0.010)	0.039*** (0.010)	0.020** (0.008)
Technicians and trades workers	-0.032*** (0.010)	0.013 (0.011)	0.019** (0.008)

The characteristics of the underemployed and unemployed

	Employed full time	Employed part time	Underemployed
Community and personal service workers	-0.072*** (0.014)	0.025** (0.011)	0.047*** (0.012)
Clerical and administrative workers	-0.079*** (0.012)	0.038*** (0.011)	0.041*** (0.010)
Sales workers	-0.096*** (0.013)	0.040*** (0.011)	0.056*** (0.010)
Machinery operators and drivers	-0.059*** (0.012)	0.013 (0.013)	0.046*** (0.012)
Labourers	-0.118*** (0.014)	0.041*** (0.010)	0.077*** (0.012)
Sector (Base = Private)			
Public	0.005 (0.009)	0.016 (0.010)	-0.021*** (0.007)
Business size (Base = 1 to 19 employees)			
20 to 199	0.028*** (0.006)	-0.012* (0.006)	-0.016*** (0.005)
200+	0.034*** (0.008)	-0.009 (0.009)	-0.025*** (0.007)
Current work schedule (Base = Regular daytime shift)			
Regular evening shift	-0.100*** (0.021)	0.059*** (0.015)	0.042*** (0.011)
Regular night shift	-0.035 (0.024)	0.006 (0.014)	0.029 (0.018)
Rotating shift	0.002 (0.008)	-0.006 (0.008)	0.003 (0.008)
Irregular schedule	-0.065*** (0.011)	0.022*** (0.008)	0.043*** (0.009)
Other	-0.054*** (0.011)	0.010 (0.011)	0.044*** (0.011)
Employment type (Base = Permanent)			
Fixed	-0.017** (0.008)	0.009 (0.007)	0.008 (0.007)
Casual	-0.250*** (0.014)	0.121*** (0.012)	0.130*** (0.009)
Award	-0.016*** (0.006)	0.007 (0.005)	0.009* (0.005)
Previously unemployed	-0.025*** (0.007)	0.002 (0.006)	0.023*** (0.006)
Wave	-0.003*** (0.001)	-0.001 (0.001)	0.004*** (0.001)

Note: Standard errors in brackets below. Statistically significance at the *0.10, **0.05 and ***0.01 level.

Source: HILDA Survey, pooled waves 8 to 16.

Table B4: Results of Model 2, females

	Employed full time	Employed part time	Underemployed
Age (Base = 15–24 years)			
25–34 years	–0.059*** (0.013)	0.093*** (0.012)	–0.034*** (0.010)
35–44 years	–0.125*** (0.015)	0.147*** (0.013)	–0.021** (0.010)
45–54 years	–0.120*** (0.014)	0.152*** (0.012)	–0.032*** (0.011)
55–64 years	–0.230*** (0.018)	0.293*** (0.017)	–0.063*** (0.012)
Highest education level (Base = Certificate III or IV)			
Postgraduate	0.030 (0.024)	–0.009 (0.024)	–0.021 (0.019)
Graduate diploma, graduate certificate	–0.008 (0.022)	0.036 (0.023)	–0.028 (0.017)
Bachelor or honours	–0.003 (0.017)	0.030* (0.017)	–0.027** (0.012)
Advanced diploma, diploma	0.025 (0.018)	0.005 (0.019)	–0.030** (0.014)
Year 12	–0.017 (0.016)	0.029** (0.015)	–0.011 (0.011)
Year 11 and below	–0.022 (0.016)	0.044*** (0.016)	–0.023** (0.010)
Family type (Base = Couple without children)			
Couple with dependents	–0.229*** (0.011)	0.207*** (0.011)	0.022*** (0.008)
Couple with non-dependents	–0.059*** (0.017)	0.046** (0.018)	0.013 (0.015)
Lone parent with dependents	–0.101*** (0.018)	0.050*** (0.015)	0.050*** (0.013)
Lone parent without dependents	0.029 (0.024)	–0.050** (0.023)	0.021 (0.017)
Lone person	0.045*** (0.013)	–0.049*** (0.013)	0.004 (0.010)
Other families	0.045** (0.019)	–0.048** (0.019)	0.003 (0.014)
Area of residence (Base = Major city)			
Regional	–0.020* (0.011)	0.005 (0.011)	0.016** (0.007)
Remote	0.049 (0.037)	0.011 (0.038)	–0.060*** (0.020)
Country of birth (Base = Australia)			
Other English speaking	0.062*** (0.017)	–0.042** (0.019)	–0.020 (0.014)

The characteristics of the underemployed and unemployed

	Employed full time	Employed part time	Underemployed
Non-English speaking	0.076*** (0.016)	-0.102*** (0.016)	0.026** (0.013)
Full-time student	-0.306*** (0.016)	0.346*** (0.017)	-0.040*** (0.009)
Work-limiting health condition	-0.041*** (0.011)	0.015 (0.011)	0.025*** (0.008)
Industry (Base = Agriculture, forestry and fishing)			
Mining	0.009 (0.083)	0.003 (0.076)	-0.012 (0.038)
Manufacturing	-0.065 (0.074)	0.044 (0.065)	0.021 (0.024)
Electricity, gas, water and waste services	-0.083 (0.089)	0.089 (0.084)	-0.006 (0.040)
Construction	-0.114 (0.077)	0.092 (0.069)	0.021 (0.028)
Wholesale trade	-0.041 (0.075)	0.025 (0.065)	0.016 (0.025)
Retail trade	-0.230*** (0.073)	0.147** (0.064)	0.083*** (0.023)
Accommodation and food services	-0.162** (0.071)	0.098 (0.063)	0.065*** (0.021)
Transport, postal and warehousing	-0.089 (0.076)	0.059 (0.067)	0.029 (0.025)
Information media and telecommunications	-0.110 (0.077)	0.073 (0.066)	0.038 (0.030)
Financial and insurance services	-0.114 (0.075)	0.081 (0.066)	0.033 (0.025)
Rental, hiring and real estate services	-0.020 (0.075)	0.001 (0.066)	0.019 (0.026)
Professional, scientific and technical services	-0.148** (0.072)	0.119* (0.063)	0.030 (0.023)
Administrative and support services	-0.158** (0.080)	0.118 (0.074)	0.041* (0.024)
Public administration and safety	-0.083 (0.073)	0.060 (0.066)	0.023 (0.023)
Education and training	-0.210*** (0.073)	0.114* (0.064)	0.095*** (0.022)
Health care and social assistance	-0.224*** (0.072)	0.162** (0.063)	0.062*** (0.021)
Arts and recreation services	-0.188** (0.077)	0.071 (0.0680)	0.117*** (0.027)
Other services	-0.171** (0.074)	0.090 (0.066)	0.081*** (0.025)
Occupation (Base = Managers)			
Professionals	-0.127*** (0.019)	0.088*** (0.020)	0.039*** (0.013)

The characteristics of the underemployed and unemployed

	Employed full time	Employed part time	Underemployed
Technicians and trades workers	-0.151*** (0.029)	0.084*** (0.027)	0.066*** (0.018)
Community and personal service workers	-0.219*** (0.020)	0.127*** (0.020)	0.092*** (0.013)
Clerical and administrative workers	-0.175*** (0.018)	0.113*** (0.020)	0.063*** (0.013)
Sales workers	-0.272*** (0.024)	0.139*** (0.022)	0.133*** (0.018)
Machinery operators and drivers	-0.094 (0.060)	-0.009 (0.057)	0.103*** (0.039)
Labourers	-0.213*** (0.027)	0.085*** (0.026)	0.128*** (0.017)
Sector (Base = Private)			
Public	-0.002 (0.014)	-0.005 (0.014)	0.006 (0.009)
Business size (Base = 1 to 19 employed)			
20 to 199	0.069*** (0.011)	-0.040*** (0.009)	-0.029*** (0.007)
200+	0.082*** (0.014)	-0.042*** (0.013)	-0.040*** (0.010)
Current work schedule (Base = Regular daytime shift)			
Regular evening shift	-0.168*** (0.030)	0.111*** (0.027)	0.057*** (0.016)
Regular night shift	-0.140*** (0.033)	0.094*** (0.034)	0.045** (0.020)
Rotating shift	-0.034* (0.017)	0.021 (0.016)	0.013 (0.010)
Irregular schedule	-0.105*** (0.017)	0.043*** (0.016)	0.062*** (0.011)
Other	-0.099*** (0.031)	0.014 (0.029)	0.085*** (0.018)
Employment type (Base = Permanent)			
Fixed	-0.008 (0.014)	-0.018 (0.012)	0.025*** (0.009)
Casual	-0.330*** (0.012)	0.185*** (0.012)	0.146*** (0.010)
Award	-0.019* (0.011)	0.001 (0.011)	0.018*** (0.007)
Previously unemployed	-0.017 (0.013)	-0.046*** (0.012)	0.062*** (0.008)
Wave	-0.001 (0.001)	-0.002 (0.001)	0.003*** (0.001)

Note: Standard errors in brackets below. Statistically significance at the *0.10, **0.05 and ***0.01 level.

Source: HILDA Survey, pooled waves 8 to 16.

Appendix C—Part I: Changes in the characteristics of the underemployed over time

In this section, we provide further analysis of some of the characteristics analysed in Part I to determine if these have changed for underemployed workers over the 16 waves of the HILDA Survey. While some of the changes may reflect broader changes in the characteristics of labour market participants or the population, it can assist with determining if these changes have also occurred among underemployed workers.

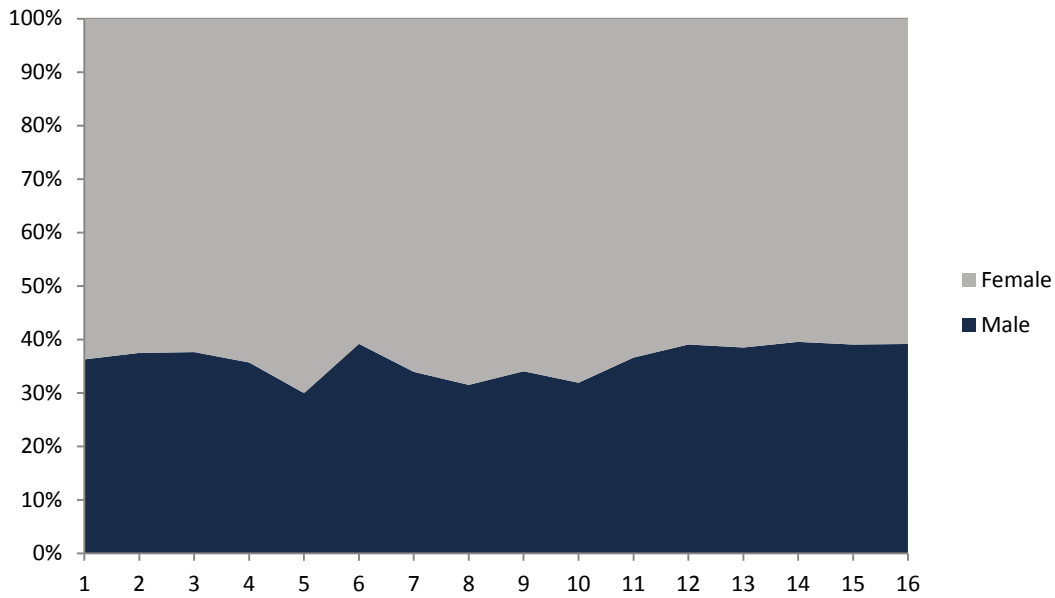
Figure C1 compares the changes in the composition of underemployed persons over time by gender. This figure shows that the composition remained relatively steady over the period, with females comprising just over 60 per cent of underemployed persons. However, there was some variation during the period, with females comprising close to 70 per cent across most of waves 5 to 10. The male proportion has been relatively steady across the more recent waves at around 40 per cent.

By highest education level, there has been a fall in the proportion of those with Year 11 or below from around 40 per cent of underemployment to just over one-quarter, a similar proportion to those who have Year 12 as their highest level of education (Figure C2). The proportion of underemployment with a Certificate III or IV, a Bachelor's degree or a Postgraduate degree increased over the period. Again, this is likely to be associated with changes in the broader population.

Changes in the composition of underemployment by age show that, while the younger two age groups comprise the highest proportions of underemployment, shifts over time have occurred in the older age groups with a fall in the proportion comprised of 35–44 year olds and an increase for 45 years and over (Figure C3). This is likely to reflect changes in the broader population.

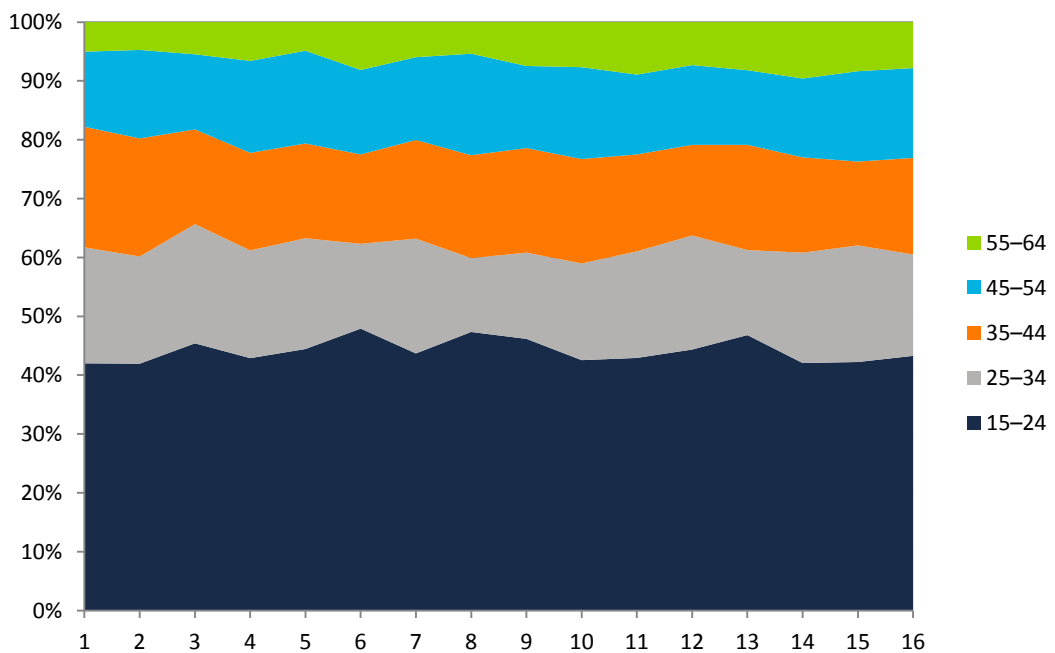
There was some variation in the proportion of underemployment by family type over the period (Figure C4). Couples without children increased as a proportion of underemployment after 2008 while the proportion fell for couples with dependents over the same period (who also comprised the highest proportion over the period). The proportion of underemployment from people living in major cities increased to 2007, and while it fell in the following wave, it has mostly increased before falling in the most recent waves (Figure C5). Full-time students comprised around one-quarter of underemployed workers, peaking at nearly 30 per cent across waves 10 to 12 (Figure C6).

Figure C1: Composition of underemployed persons by gender



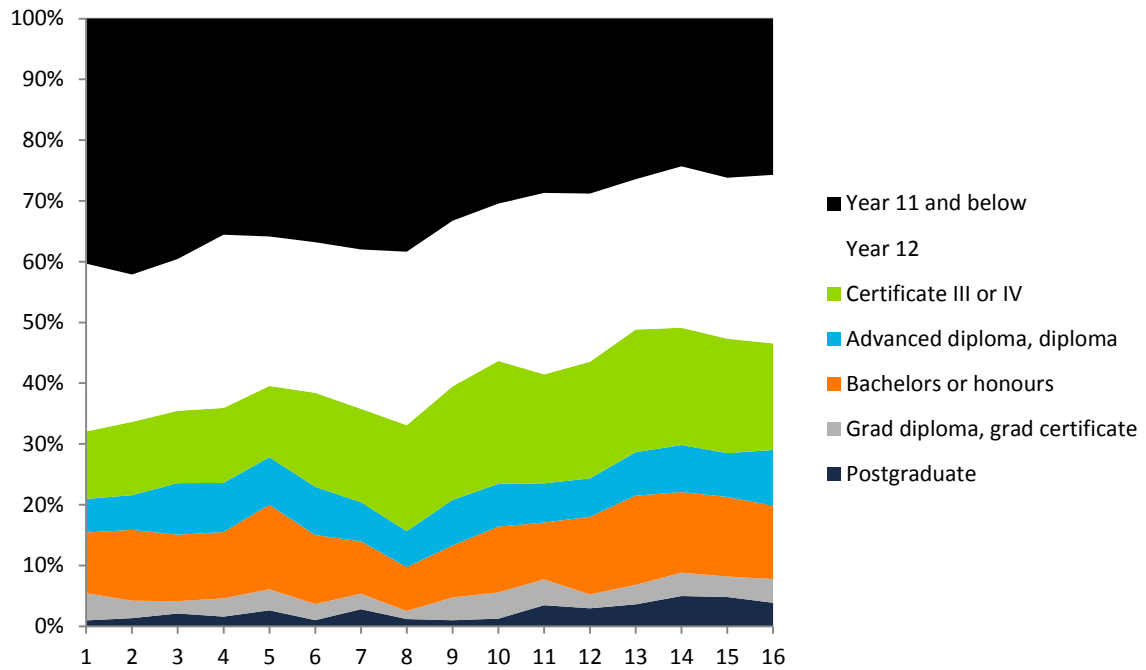
Source: HILDA Survey, waves 1 to 16.

Figure C2: Composition of underemployed persons by age



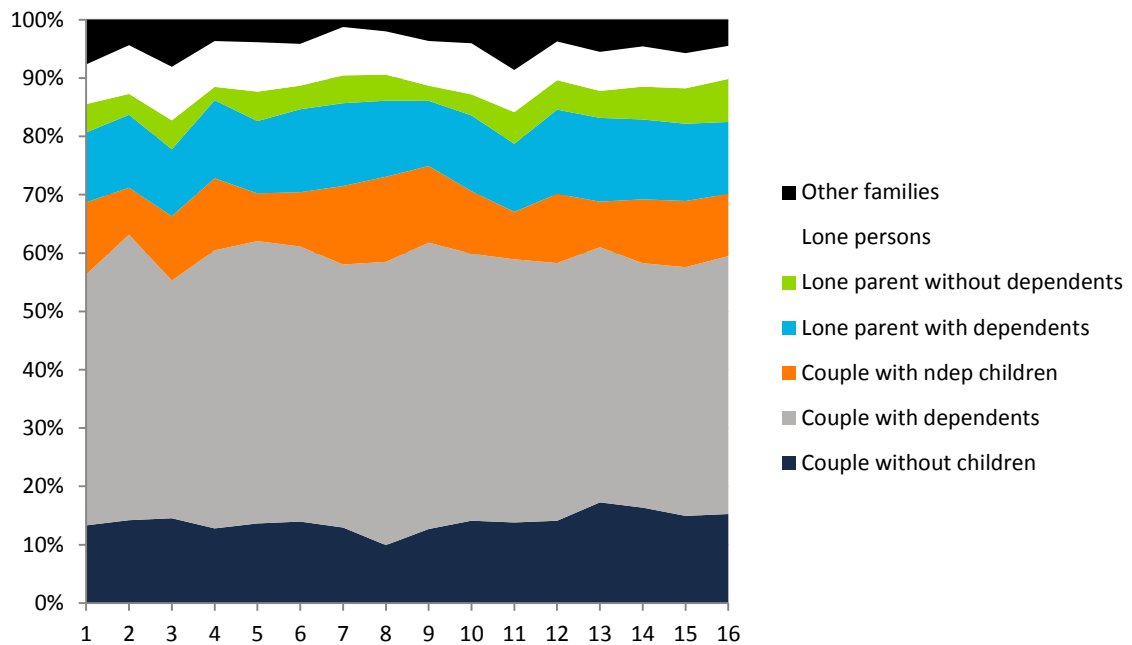
Source: HILDA Survey, waves 1 to 16.

Figure C3: Composition of underemployed persons by highest educational attainment



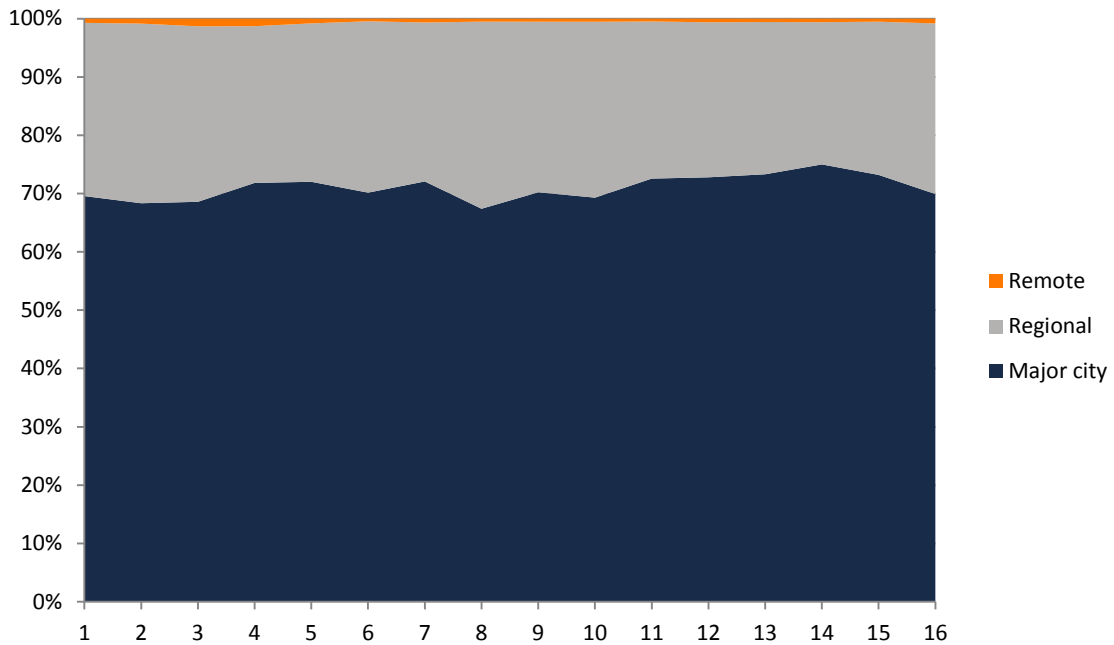
Source: HILDA Survey, waves 1 to 16.

Figure C4: Composition of underemployed persons by family type



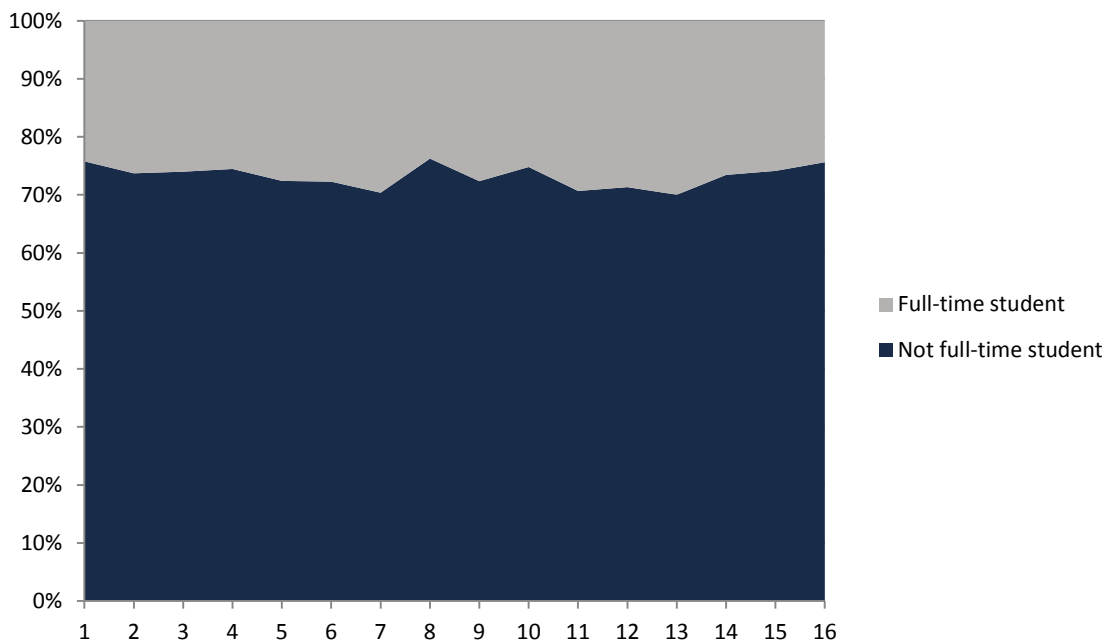
Source: HILDA Survey, waves 1 to 16.

Figure C5: Composition of underemployed persons by area of residence



Source: HILDA Survey, waves 1 to 16.

Figure C6: Composition of underemployed persons by full-time student status



Source: HILDA Survey, waves 1 to 16.

Appendix D—Part II: Duration of underemployment and mobility to alternative employment states

Table D1: Number of underemployment spells contributed per person in the sample

No. spells	No. persons	%	Cum. %
1	3,848	73.35	73.35
2	1,059	20.19	93.54
3	267	5.09	98.63
4	67	1.28	99.90
5	4	0.08	99.98
6	1	0.02	100
Total	5,246	100	

Source: Authors' calculations based on HILDA Survey General Release 16.

Table D2: Case numbers and hazard rates of exiting underemployment

Years in under-employment	Remain underemployed		Exit into full employment		Exit into non-employment		Total exit		Total
	n	%	n	%	n	%	n	%	n
1	2,235	31.7	3,757	53.2	1,069	15.1	4,826	68.3	7,061
2	786	41.3	887	46.6	230	12.1	1,117	58.7	1,903
3	320	49.2	268	41.2	63	9.7	331	50.8	651
4	139	52.3	101	38.0	26	9.8	127	47.7	266
5	64	56.6	39	34.5	10	8.8	49	43.4	113
6	36	63.2	17	29.8	4	7.0	21	36.8	57
7	20	58.8	10	29.4	4	11.8	14	41.2	34
8	15	88.2	2	11.8	0	0.0	2	11.8	17

Source: Authors' calculations based on HILDA release 16.

Table D3: Summary statistics for multivariate event history model

Characteristic	Mean	SD
Years underemployed	1.52	1.07
Male	0.34	0.47
Age	35.35	14.51
Educational level		
Postgraduate	0.03	0.16
Graduate diploma / Certificate	0.04	0.20
Bachelor or Honours	0.12	0.32
Adv. diploma or Diploma	0.08	0.27
Certificate III or IV	0.20	0.40
Year 12	0.25	0.43
Year 11 or less	0.29	0.45
Full-time student	0.19	0.40
Live with partner	0.49	0.50
Age youngest child		
No child below 14	0.70	0.46
Youngest child 0-4	0.13	0.33
Youngest child 5-14	0.17	0.38
Area of Residence		
Major cities	0.64	0.48
Inner regional	0.24	0.43
Outer regional / Remote / Very remote	0.11	0.31
Work-limiting health condition	0.14	0.35
Origin		
Australia – Indigenous	0.03	0.17
Australia – Non-Indigenous	0.80	0.40
Main English-speaking country	0.07	0.25
Other country	0.11	0.31
Speaks English less than very well	0.03	0.17
Employment type		
Permanent contract	0.25	0.44
Fixed-term contract	0.05	0.22
Casual contract	0.55	0.50
Self-employed with employees	0.04	0.19
Self-employed without employees/ Other arrangements	0.11	0.31
Years with employer / in current business	3.89	6.06
Supervisory responsibilities	0.25	0.43
Member of trade union/employee association	0.16	0.37
Public sector	0.15	0.35
Occupation		
Managers	0.03	0.17
Professionals	0.15	0.36
Technicians and trades workers	0.07	0.25
Community and personal service workers	0.21	0.41
Clerical and administrative workers	0.12	0.32

The characteristics of the underemployed and unemployed

Characteristic	Mean	SD
Sales workers	0.19	0.40
Machinery operators and drivers	0.04	0.20
Labourers	0.18	0.39
Industry		
Agriculture, forestry and fishing	0.02	0.15
Mining	0.00	0.05
Manufacturing	0.04	0.19
Electricity, gas, water and waste services	0.00	0.06
Construction	0.04	0.19
Wholesale trade	0.02	0.12
Retail trade	0.19	0.39
Accommodation and food services	0.15	0.35
Transport, postal and warehousing	0.03	0.18
Information media and telecommunications	0.01	0.12
Financial and insurance services	0.01	0.11
Rental, hiring and real estate services	0.01	0.10
Professional, scientific and technical services	0.05	0.21
Administrative and support services	0.05	0.22
Public administration and safety	0.02	0.15
Education and training	0.11	0.32
Health care and social assistance	0.16	0.37
Arts and recreation services	0.03	0.18
Other services	0.04	0.21

Source: Authors' calculations based on HILDA Survey General Release 16.

Table D4: Event history analysis of exit from underemployment by gender

Characteristic	Men		Women	
	Fully employed	Non-employment	Fully employed	Non-employment
Years underemployed	0.77 ^{***}	0.75 ^{***}	0.78 ^{***}	0.82 ^{***}
Age	0.95 ^{**}	0.88 ^{***}	0.98	0.89 ^{***}
Age squared (divided by 10)	1.00 [*]	1.02 ^{***}	1.00	1.01 ^{***}
Educational level				
Postgraduate	1.07	1.38	1.49 [*]	1.26
Graduate diploma / Certificate	0.94	1.91 [*]	1.24	0.80
Bachelor or Honours	1.45 ^{**}	1.81 ^{**}	1.10	0.89
Adv. diploma or Diploma	1.10	1.07	1.16	1.01
Certificate III or IV (ref.)	1	1	1	1
Year 12	1.08	0.97	1.04	0.75 ^{**}
Year 11 or less	0.97	1.18	0.91	1.22 [*]
Full-time student	0.81 [*]	0.70 ^{**}	0.85 [*]	0.56 ^{***}
Live with partner	1.65 ^{***}	1.13	1.09	0.93
Age youngest child				
No child below 14 (ref.)	1	1	1	1
Youngest child 0-4	0.90	1.09	0.92	1.87 ^{***}
Youngest child 5-14	0.94	0.97	0.84 ^{**}	1.10
Area of Residence				
Major cities (ref.)	1	1	1	1
Inner regional	0.89	1.13	0.96	0.82 ^{**}
Outer regional / Remote / Very remote	0.82	0.91	1.09	1.22
Work-limiting health condition	0.79 ^{**}	1.75 ^{***}	0.82 ^{**}	1.88 ^{***}
Origin				
Australia – Indigenous	0.70	1.40	0.97	1.59 ^{**}
Australia – Non-Indigenous (ref.)	1	1	1	1
Main English-speaking country	1.47 ^{**}	1.29	1.13	0.99
Other country	0.71 ^{**}	0.94	0.79 ^{**}	1.33 [*]
Speaks English less than very well	0.94	0.59	1.00	0.89
Employment type				
Permanent contract (ref.)	1	1	1	1
Fixed-term contract	0.73	1.82 [*]	0.95	1.00
Casual contract	0.74 ^{***}	1.54 ^{**}	0.77 ^{***}	1.44 ^{***}
Self-employed with employees	1.09	1.41	1.00	1.78 ^{**}
Self-employed without employees / Other arrangements	0.59 ^{***}	1.48	0.80 [*]	1.46 ^{**}
Years with employer / in current business	0.98	0.92 ^{***}	1.02	0.92 ^{***}
Years with employer / in current business squared (divided by 10)	1.00	1.02 ^{***}	0.99	1.02 ^{**}
Supervisory responsibilities	1.21 [*]	0.87	1.15 ^{**}	0.77 ^{**}
Member of trade union / employee association	0.86	0.68 ^{**}	0.90	0.75 ^{**}
Public sector	1.39 ^{**}	1.19	0.95	0.70 ^{**}

The characteristics of the underemployed and unemployed

Characteristic	Men Competing risks		Women Competing risks	
	Fully employed	Non-employment	Fully employed	Non-employment
Occupation				
Managers	1.36	0.92	0.98	0.89
Professionals (ref.)				
Technicians and trades workers	0.85	0.79	0.91	1.09
Community and personal service workers	0.82	0.62 [*]	0.80 ^{**}	1.02
Clerical and administrative workers	0.45 ^{***}	0.22 ^{***}	0.97	0.89
Sales workers	0.68 [*]	0.44 ^{***}	0.65 ^{***}	0.79
Machinery operators and drivers	0.68 [*]	0.45 ^{**}	0.66	1.22
Labourers	0.68 ^{**}	0.63 [*]	0.67 ^{***}	0.90
Constant	18.14 ^{***}	17.56 ^{***}	5.27 ^{***}	4.03 ^{***}
n (person-year observations)	3,440		6,590	
n (spells)	2,463		4,525	
n (events)	1,769	501	3,275	887

Note: (i) Exponentiated coefficients. (ii) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. (iii) The models also include 18 industry dummy variables and thirteen year dummy variables. (iv) The area of residence variables are based on categories used by the Australian Bureau of Statistics [ABS] in summarising the remoteness of locations in Australia at the time of the 2011 Census (see ABS, 2013). (v) The employment type "Other arrangements" includes employees whose employment arrangements are not easily classifiable (e.g., persons working on commission) as well as unpaid family workers. (vi) The occupation groups used are the eight major occupation groups as defined in the Australian and New Zealand Standard Classification of Occupations, 2013.

Source: Authors' calculations based on HILDA Survey General Release 16.