

## 9. The role of family composition, education, and disability





### **Key Findings**

- When we augment the tax data with the analysis of Household, Income and Labour Dynamics in Australia (HILDA) data, we find that earnings shocks and recovery rates differ by family composition, educational attainment and participation, and by disability status.
- Males who have a partner are less likely to experience an earnings shock. Females, however, have a greater likelihood of experiencing an earnings shock if they have young children.
- Those with university education are less likely to fall into earnings shock and recover more rapidly. Persons with a disability have higher earnings shocks rates and recover more slowly.

## 9.1

### Introduction



In Chapters 4 to 8 we documented the importance of gender, pre-shock earnings, age and geography in explaining differences in earnings shock and recovery rates. Yet there is more to an earnings shock and recovery than a change in employment and/or hours. A range of factors contributes to and exacerbates periods of earning shocks and/or recoveries, as well as speeding up recovery. Although the primary focus of this report has been to document and to explore shocks and recoveries, this chapter explores a few of the factors that are correlated with shocks and recoveries. We focus on family composition, education, and disability.

Family composition is a critical component for both experiencing and recovering from a shock. If one is single, one might be less inclined to take on risk in terms of a willingness to change jobs, to pursue a different career and/or a changing effort that will affect employment performance. Similarly, if one has young children, one may face different constraints from those experienced by an individual without children. We also might expect family composition to have differential effects on males and females.

Many studies have found that highly educated people have higher earnings, higher chances of falling into unemployment and more 'prestigious'

careers (see, for example, Psacharopoulos and Patrinos, 2018, for a recent review). The reason for this is that schooling enhances productivity, imparting knowledge, improving skills and increasing general ability. In a study on earnings shocks, Blundell et al. (2016) use Norwegian administrative data and find that less-educated people experience greater permanent shocks, and those shocks are more severe at older ages. Earnings shocks of highly educated people are, on average, less severe and mostly occur at younger ages.

Finally, we explore the role of having a temporary or permanent disability on earnings shocks. Disability may reduce productivity and, in some cases, increase absenteeism. There is an extensive literature that explores the relationship between disability and earnings. Studies for Australia have found that poor health decreases labour force participation for males and females (Cai and Kalb, 2006) and disability reduces employment and hours worked while increasing welfare reliance (Wilkins, 2003). Polidano and Vu (2013) show that disability has a stronger impact on earnings for less-educated people. They find that, compared to people with higher educational attainment, the less educated are more likely to be unemployed and on income support several years after the onset of a disability.



ALife contains limited information on the presence of a partner and the presence of dependent children. In more recent years, this information has become better in terms of the consistency in information across time for a tax filer. ALife, however, on its own, has limited to no information on information tied to educational attainment and disability. Therefore, we will use data taken from the Household, Income and Labour Dynamics in Australia (HILDA) Survey, a longitudinal survey representative of the Australian population that collects data on earnings, income and a variety of socio-demographic characteristics, including educational attainment and disability status.

## 9.2

### Earnings shocks and recoveries: The role of family composition



The role of partners in earnings shocks and recoveries is ambiguous. In couples with a primary ‘breadwinner’, the breadwinner may be particularly incentivised to avoid earnings shocks and, in the event they experience a shock, recovers from the shock quickly. On the other hand, individuals in dual-earner couples may find it easier to quit a job or to delay the search for a new job if they can rely on their partner’s earnings.

The role of children in earnings shocks and recoveries is likely to differ by gender. Motherhood tends to reduce female labour supply, increases the probability of females experiencing a voluntary earnings shock, and slows down recoveries if the family decides it is better for the mother to take on the lion’s share of childminding. Moreover, females may spend more time in looking after children even after returning to work, which will result in working fewer hours, and, thus, an observed longer period for recovery from an earnings shock associated with having children. On the other hand, if a man is considered the family’s primary breadwinner, he may search for stable jobs to avoid fluctuations in earnings.

In 2001, modifications to the Australian tax form were made that makes it easier to identify if an individual is living with a spouse (married or de facto) and their number of children. Initially, however, information on a spouse was not required unless the individual was claiming a tax offset related to having a spouse. From 2012 onwards, all tax filers are expected to complete questions relating to their marital status.

Information on children is limited to the number of children and students claimed for the purposes of reporting information used to calculate the individual’s Medicare levy. We do not observe the ages of children in ALife. As we observe each year of the tax filer’s return, however, we can approximate whether the individual has recently had a child by comparing the information provided in the previous year with the information provided in the year under study.

Our analysis will focus on the period from 2012 to 2017 and will only capture information for those individuals who lodge a tax return because we do not observe family characteristics for tax years in which an individual has not lodged a tax return.

Further, as the impact on labour supply and earnings may vary with children's ages, we study separately parents aged 25 to 40 and those aged 41 to 54 (which imperfectly captures parents with younger versus older children).

To study the role of family composition on earnings shocks, we group tax filers based on the following classification:

- partner and newborn child;
- partner and dependent children (no newborn child);
- partner and no dependent children;
- single parent (includes dependent children of any age);<sup>22</sup>
- single.

We classify the tax filer's family status for each year. Thus, an individual can change family status over time. For the purposes of this report, we focus on differences relating to the current status of the individual for the year under study.<sup>23</sup>

In Table 9.1 we report the share of tax filers observed between 2012 and 2017, by family type. Given one's family status can change over time, the shares represent ever having been observed as a given family type. Thus, a given tax filer may be represented in more than one grouping.

**Table 9.1. Persons, by family type. Years 2012–2017**

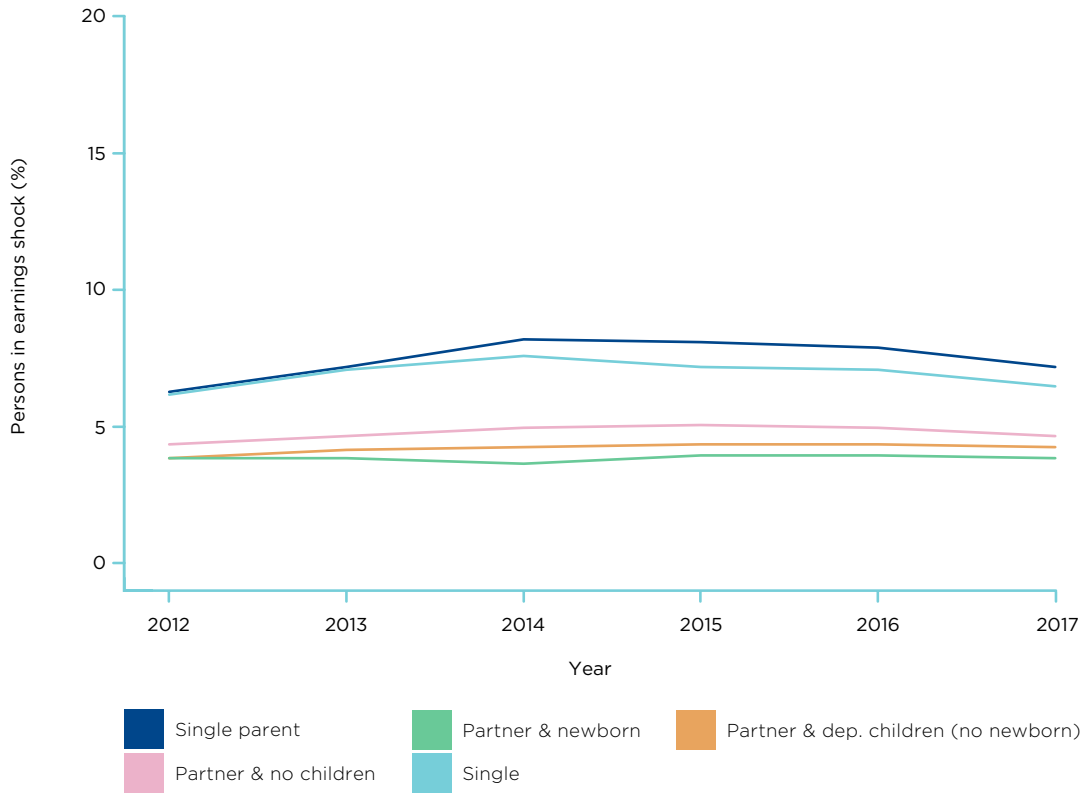
	Males (1)	Females (2)
<b>All life sample under study</b>	498,730	441,131
% Partner, newborn	4.7	3.9
% Partner, no children	20.9	24.1
% Partner with dependent children (no newborn)	40.0	35.9
% Single parent	6.5	10.4
% Single	27.9	25.7

*Notes:* This table shows the proportion of adults who have ever been classified in a family type from 2012 to 2017. As family types can change over time, percentages do not add up to 100.

22 Due to sample sizes, we could not create a subgroup of single parents with or without a newborn child.

23 In future report and with more data, we can study the effects of changes to one's family composition on shocks and recoveries.

**Figure 9.1. Persons experiencing an earnings shock, by family type—Males aged 25 to 40**

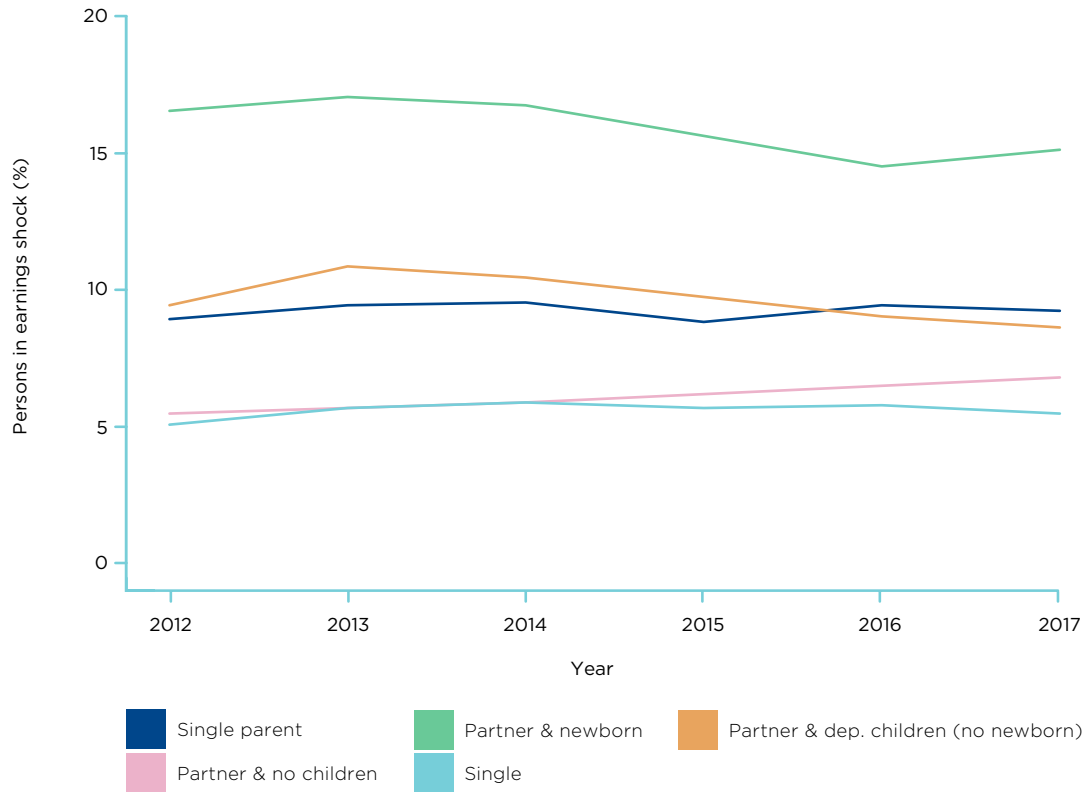


Notes: Shares represent persons entering an earnings shock in a particular year as defined in chapter 9, section 2.

In Figure 9.1 we depict the earnings shock rates for males by family type for the year under study. For all family types, the trends in shocks rates are similar. Males without a partner have a higher probability of experiencing an earnings shock. Singles and single-parent males have an earnings shock rate around three percentage points higher than males living with a partner. In 2014, 7.6 percent of single males and 8.2 percent of single parents experienced an earnings shock. Males with a newborn child have the lowest earnings shock rate at 3.7 percent. Partnered males have similar earnings shock rates, ranging between 4 and 5 percent, irrespective of the presence of children.

The fact that not having a partner is associated with a higher probability of experiencing earnings shocks may reflect a different dynamic for males with children than for those without children. Single-parent males who experience a shock and need to provide for their children may face financial hardship, whereas single males without dependent children may be more likely to reduce earnings as a voluntary decision.

The trends and shock rates for females aged 25 to 40, depicted in Figure 9.2, look very different. Females with a newborn child have the highest earnings shock rate. In 2014, 16.6 percent of females with a newborn child experienced an earnings shock. The share decreased slightly, to approximately 14 percent, in 2016 and 2017. Compared to males, females with dependent children are more likely to experience an earnings shock. This finding likely is attributed to the observation that females are more likely to bear child-care responsibilities and may prefer to reduce earnings by moving to part-time employment or not working for some time. In 2014, 9.5 percent of single-parent females and 10.4 percent of females who have a partner and children experienced an earnings shock. Females with no dependent children have the lowest probability of experiencing an earnings shock. In 2014, the earnings shock rate was 5.9 percent for both single and partnered females without children.

**Figure 9.2. Persons experiencing an earnings shock, by family type—Females aged 25 to 40**

Notes: Shares represent persons entering an earnings shock in a particular year as defined in chapter 9, section 2.

In Figures 9.3 and 9.4 we depict the probability of experiencing an earnings shock by family type for males and females aged 41 to 54. The earnings shock rates for males aged 41 to 54 are similar to those for males aged 25 to 40, with the exception of single-parent males. Older single-parent males exhibit a lower probability of experiencing an earnings shock than younger single-parent males.

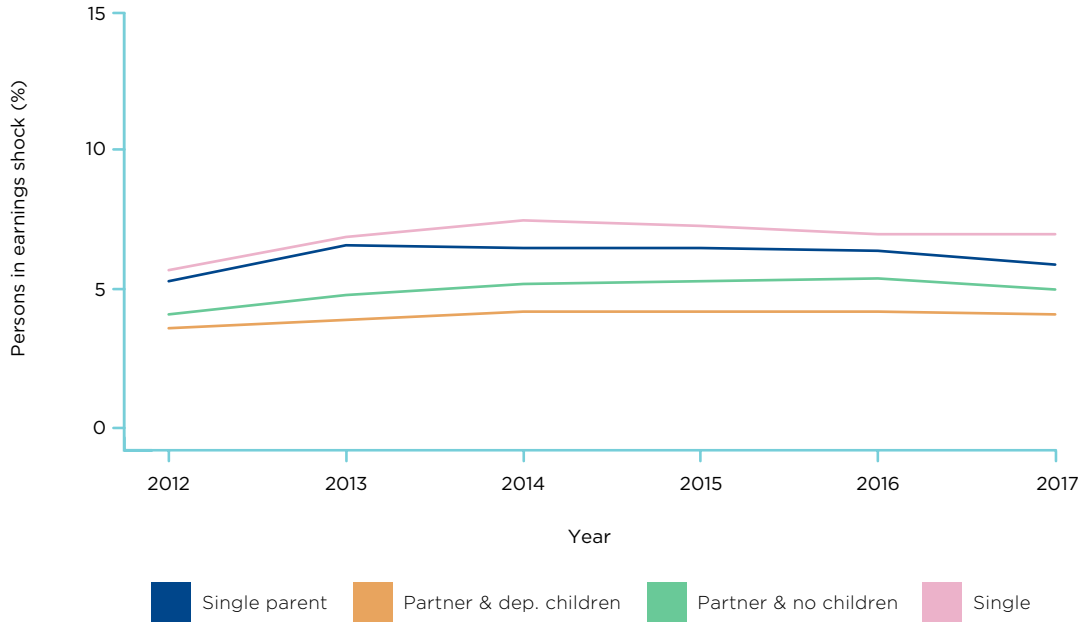
Comparing Figures 9.2 and 9.4, the earnings shock rates of females aged 41 to 54 are lower than those aged 25 to 40 for all family types. The shock rates of females with children are considerably lower, confirming that the labour supply of females at older ages is likely more stable as children grow up and become more independent. In 2014, 4.2 percent of partnered females aged 41 to 54 with dependent children experienced an earnings shock, compared to 10.4 percent of those aged 25 to 40. In the same year, the share of single-parent females aged 41 to 54 experiencing an earnings shock was 5 percent, compared with 9.5 percent for single-parent females aged 25 to 40. Finally, it is interesting to note that the probability of experiencing an earnings shock is higher for single males and single-parent males aged 41 to 54 than females in those family types.

Does the time it takes to recover from a shock vary by family type? Figures 9.5 and 9.6 depict recovery rates by gender for those aged 25 to 40, respectively. As we can only examine earnings shocks by family type from 2012, the longest period over which we can examine recoveries is five years.

Males recover faster than females in all family types except for singles. Single females recover faster (by an order of magnitude of more than 10 percent within five years) than males, even though single females are less likely to experience an earnings shock relative to single males. Figure 9.5 illustrates that the probability of recovering from a shock for males is similar in all family types. Only males with a partner and no dependent children have a slightly higher recovery rate than the other groups: 39.2 percent of partnered males with no dependent children have recovered within three years and 50.6 percent have recovered within five years, compared with respective recovery rates of 36 percent and 47 percent for the other family types.

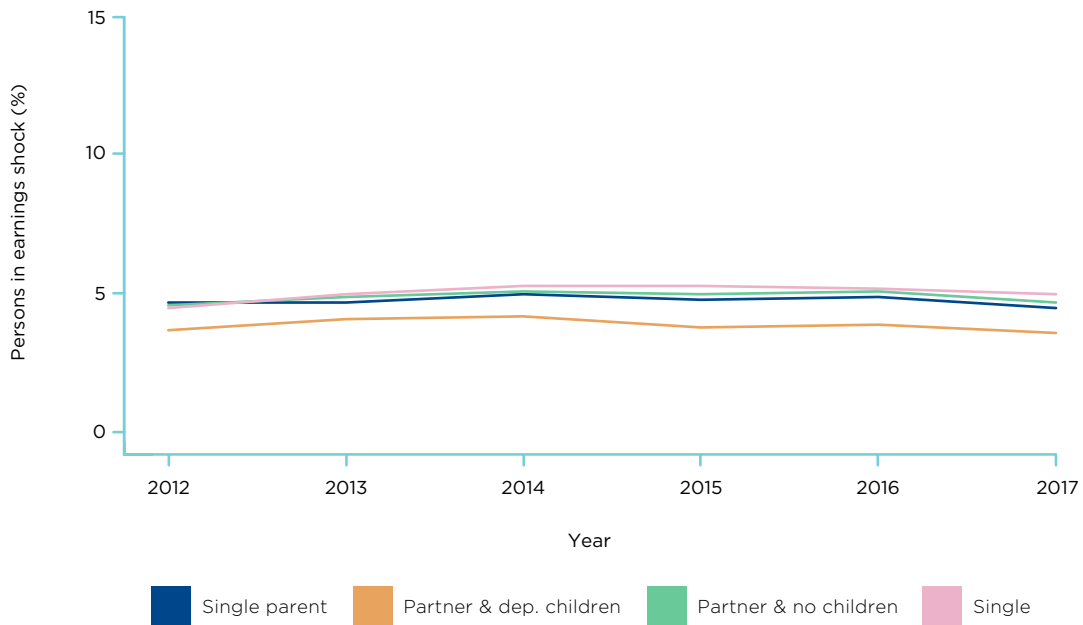


**Figure 9.3. Persons experiencing an earnings shock, by family type—Males aged 41 to 54**

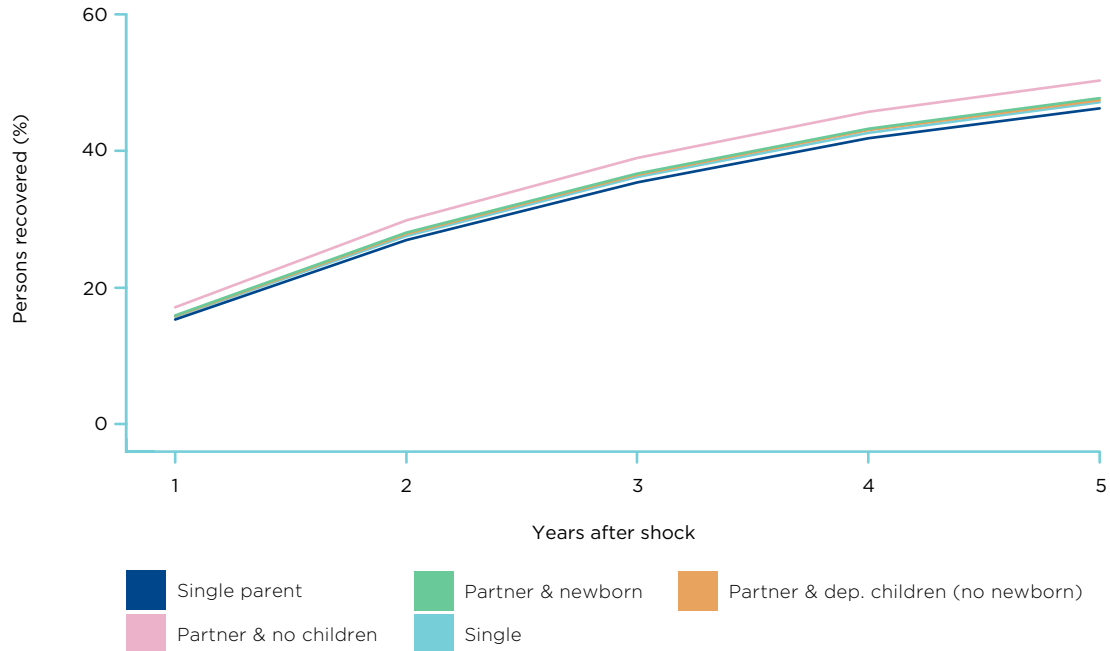


Notes: Shares represent persons entering an earnings shock in a particular year as defined in chapter 9, section 2.

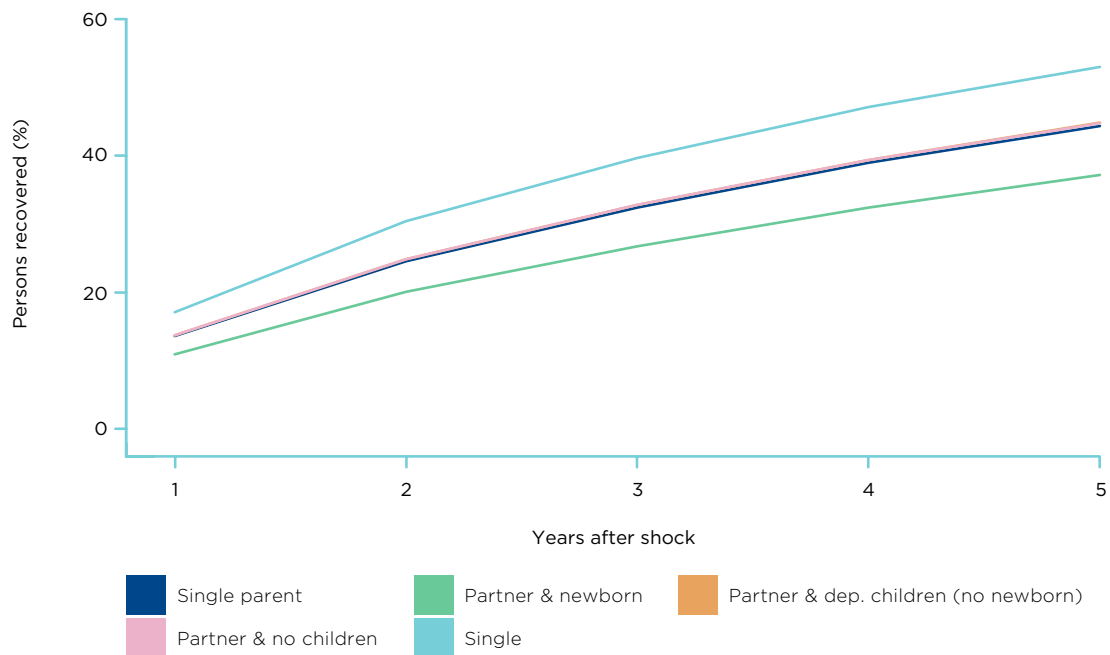
**Figure 9.4. Persons experiencing an earnings shock, by family type—Females aged 41 to 54**



Notes: Shares represent persons entering an earnings shock in a particular year as defined in chapter 9, section 2.

**Figure 9.5. Predicted recoveries from an earnings shock, by family type—Males aged 25 to 40**

Notes: Predicted recovery rates are estimated from a Cox regression model. The model estimates the probability of recovering from the shock after  $t$  years given that the person has not recovered after  $t-1$  years. Covariates are family type, macroeconomics period, earnings squared, age, age squared, depth of the shock, an indicator for a losing 100% of earnings.

**Figure 9.6. Predicted recoveries from an earnings shock, by family type—Females aged 25 to 40**

Notes: Predicted recovery rates are estimated from a Cox regression model. The model estimates the probability of recovering from the shock after  $t$  years given that the person has not recovered after  $t-1$  years. Covariates are family type, macroeconomics period, earnings squared, age, age squared, depth of the shock, an indicator for a losing 100 percent of earnings.

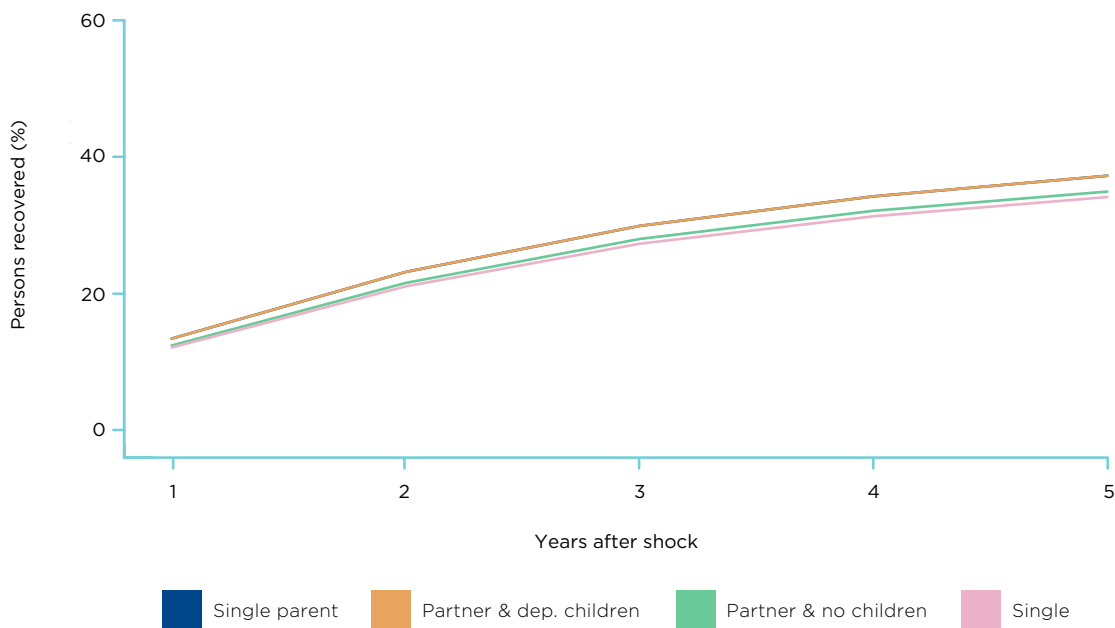
Females aged 25 to 40, however, have more variable recovery rates by family type. Maternity slows down recoveries suggesting that females may take some time before returning to work or move to part-time employment after giving birth. The recovery rates of females with newborn children are 26.8 percent after three years and 37.3 percent after five years. On the other hand, single females are the fastest group to recover. Their probability of recovery is 39.8 percent after three years and 53.2 percent after five years. Recovery rates of the three other family types are similar. The recovery rates of females who live with a partner (with children or without) and single parents are 36 percent after three years and 47 percent after five years.

In Figures 9.7 and 9.8 we depict the recovery rates for males and females aged 41 to 54. As shown in Chapter 7, recovery rates decrease with age. Across family type, recovery rates for males are similar, regardless of family type. These rates are uniformly lower for older than for younger males, to the order of 10 percentage points. Females aged 41 to 54 recover more rapidly than males in the same age range across all family types.

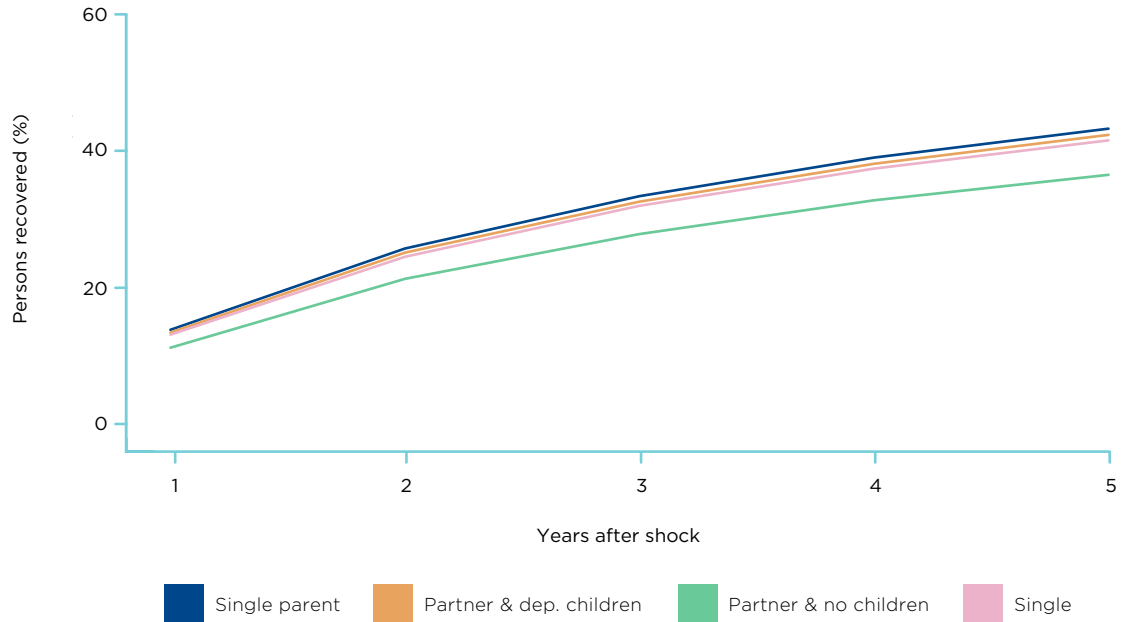
Overall, however, there is little difference in recovery rates by family type, with single-parent females exhibiting a slightly faster recovery rate. Moreover, the recovery rates for older females are slightly lower than for younger females.

Overall, the highest association between family type and shocks is observed for younger adults, those closer to childbearing ages, aged 25 to 40. This is most evident for females. Thus, our findings in Chapter 7, which illustrated significant differences in shocks and recoveries by gender, is likely explained by differences that may be attributed to family composition.

**Figure 9.7. Predicted recoveries from an earnings shock, by family type—Males aged 41 to 54**



Notes: Predicted recovery rates are estimated from a Cox regression model. The model estimates the probability of recovering from the shock after t years given that the person has not recovered after t-1 years. Covariates are family type, macroeconomics period, earnings squared, age, age squared, depth of the shock, an indicator for a losing 100 percent of earnings.

**Figure 9.8. Predicted recoveries from an earnings shock,, by family type—Females aged 41 to 54**

Notes: Predicted recovery rates are estimated from a Cox regression model. The model estimates the probability of recovering from the shock after  $t$  years given that the person has not recovered after  $t-1$  years. Covariates are family type, macroeconomics period, earnings squared, age, age squared, depth of the shock, an indicator for a losing 100 percent of earnings.

## 9.3

### Earnings shocks and recoveries: The role of education and disability status



In this section, we examine the role of educational attainment and disability status in the year of a shock to explore the potential correlation between these two characteristics and earnings shocks or recoveries. This analysis uses data from the HILDA Survey.

For this analysis we rely on data for those respondents aged 25 to 54 between 2001 and 2017. In Table 9.2, we report the statistics on the number of individuals available for study using the HILDA data. The initial sample captures information on 21,476 individuals. After excluding those for whom we never observe annual earnings above what is needed to qualify for an earnings shock, those we do not observe for at least three consecutive years, and those for whom we do not observe earnings that are above the threshold for the two years used to measure an earnings shock, we are left with a sample of 12,978 individuals that can be used to explore earning shocks.

Our starting point is to explore potential differences in the samples constructed using HILDA and the ALife datasets.<sup>24</sup> There are two key reasons for the HILDA and ALife samples to differ. The first is with respect to the population from which the HILDA sample is drawn. Although

the sample is periodically refreshed to capture recent immigrants to Australia, ALife draws from a population that captures all tax filers, which would include immigrants. Second, earnings and other sources of income are captured in HILDA based on a self-report by the respondent. While earnings are also self-reported by the tax filer, there are differences in the potential repercussions for misreporting earnings and other sources of income between ALife and HILDA. There are no repercussions for misreporting earnings in HILDA, whereas there could be serious repercussions for misreporting income on one's tax return.

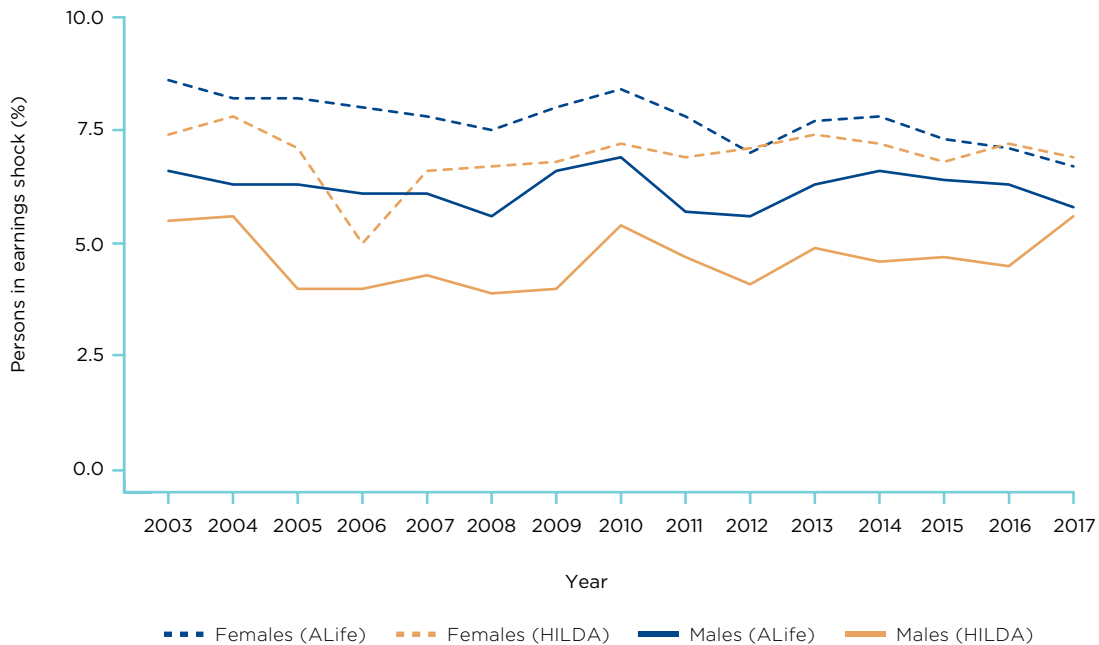
Figure 9.9 depicts the earnings shock rates for HILDA and ALife, by gender. The shock rates using HILDA data are depicted in orange and those using ALife data are depicted in blue. For both genders, the shock rates are higher in ALife than for HILDA. For the earlier years, the gap for females is in the order of two percentage points. This gap is reduced to closer to one percentage point by the end of the sample period. For females, the trends in shock rates for the two datasets are similar.

<sup>24</sup> The analysis using the HILDA Survey data spans 2001–2017. We use earnings data for the two preceding years to measure pre-shock earnings, which means we can measure shocks for the period 2003 to 2017.

**Table 9.2. Development of the working data set. HILDA data, 2001–2017**

	Total persons		
	Males (1)	Females (2)	Total (3)
<b>Persons ever aged 25 to 54</b>	10,704	10,771	21,476
Persons whose earnings never exceeded the minimum threshold for measuring an earnings shock (-\$8,900 in 2017)	907	1,857	2,764
Persons who are never observed for at least three consecutive years	1,930	1,522	3,452
Persons whose earnings for the two consecutive years used to identify an earnings shock are always less than the minimum threshold (-\$8,900 in 2017)	1,089	1,192	2,282
Number of persons studied	6,778	6,200	12,978

Notes: For the definition of earnings shock, see chapter 2, section 2.

**Figure 9.9. Persons experiencing an earnings shocks, by gender and data source**

Notes: Shares are persons entering an earnings shock in a specific year as defined in chapter 2, section 2.

For males, there is a bigger gap in the earnings shocks calculated using ALife and HILDA data. For most years, the shock rates are higher using the ALife data by approximately 2.5 percentage points. Except for the period around 2006, however, the trends in the shock rates are similar.

HILDA has the advantage of collecting information on socio-economic characteristics but, compared to ALife, is a much smaller sample. For example, between 2003 and 2017, we observe a total of 1,924 earnings shock events for males and a total of 2,387 shock events for

females using HILDA. Unfortunately, this limits our ability to analyse shocks and recoveries on a yearly basis. Thus, to explore the association between educational attainment or disability on shocks and recoveries, we will explore the data for the entire sample period.

We focus on educational attainment by identifying whether the person under study has received a university degree and/or a post-high school trade certificate, diploma or degree. Education is potentially an important factor to prevent earnings shocks and/or to assist in a more rapid recovery from a shock. Individuals who are highly educated are likely to have more valuable skills in the labour market and therefore be more sought after by employers. In Table 9.3, we report the share of the HILDA sample under study by highest level of educational attainment. Females are more likely to report having some training beyond high school (58 versus 47 percent) as well as having a university degree (40 versus 29 percent).

The last dimension we analyse is disability, which in this analysis we define as a long-term health condition that restricts daily activities. These disabilities may or may not affect the working conditions of the individual depending on the nature of the condition and the individual's occupation. Disability may lower people's productivity by deteriorating skills, worsening mental health, limiting the ability to do tasks or increasing absenteeism.

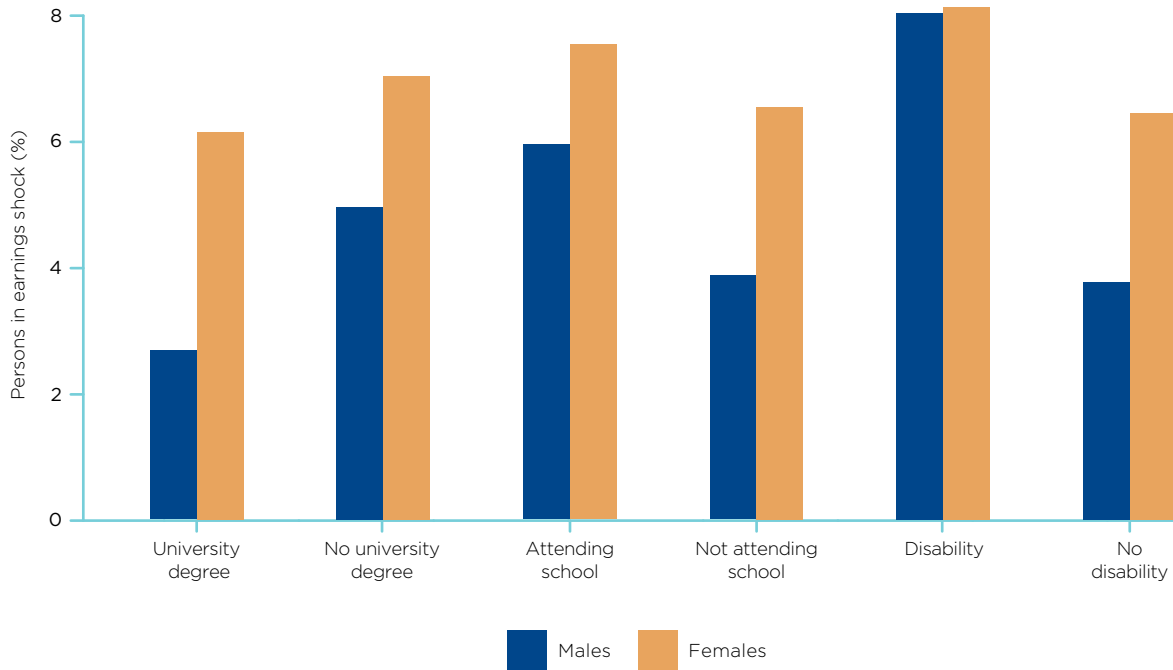
The measure of disability used in this analysis is a proxy for a potential health condition that could affect the ability to undertake certain tasks, restrictions to the number of hours one might be able to work and/or increased absences from work. Table 9.3 shows the share of the HILDA sample under study by ever having reported a disability. Given we include temporary spells of disability, the share of respondents observed with at least one year of a disability is close to 50 percent for both males and females.

To explore the correlation of education and/or disability in respect of experiencing an earnings shock, we run a regression that uses as a dependent variable a value of 1 indicating the respondent experienced an earnings shock in that year, and 0 otherwise. The regression includes, as controls, measures to reflect the level of educational of the respondent in that year, whether the respondent reports a disability in that year, and a set of controls to capture age, year, family composition and previous earnings.

**Table 9.3. Persons by educational attainment, attendance in education and disability status**

	Males (1)	Females (2)
<b>HILDA sample under study</b>	6,778	6,200
With university degree	28.8%	40.4%
Ever attended post high school certificate, diploma or degree in the period under study	46.6%	57.6%
Ever reported a temporary or permanent disability in the period under study	45.2%	45.9%

*Notes:* The sample consists of HILDA respondents aged 25–54 who fit the criteria defined in Table 9.2. Disability is defined as a health condition affecting daily activities.

**Figure 9.10. Persons experiencing an earnings shock, by educational attainment and disability status**

Notes: Shares are predicted probabilities recovered from a linear probability model. The dependent variable is a dummy indicator of experiencing an earnings shock. Covariates are age, age squared, survey-wave, having partner, having newborn child, dependent children, previous earnings. Data source: HILDA.

Figure 9.10 reports the share of respondents with an earnings shock conditioned on the characteristics of the respondent (e.g., age, family composition). The first four characteristics capture different levels of educational attainment. Both males and females are less likely to experience an earnings shock if they have a university degree than if they have not. The difference in shock rates is higher for males (-2 percentage points) than for females (-1 percentage points). If, in the year of the shock, the respondent is attending a program beyond high school, the respondent is more likely to experience a shock than if the respondent is not attending high school.

In Figure 9.11, we report the recovery rates from shocks based on whether the respondent in shock has a university degree or not.<sup>25</sup> The recovery rates shown in Figure 9.11 support the belief that education is an important asset in the labour market. Recovery rates of males and females with a university qualification are considerably higher. The probabilities of recovering for university-education males are 40

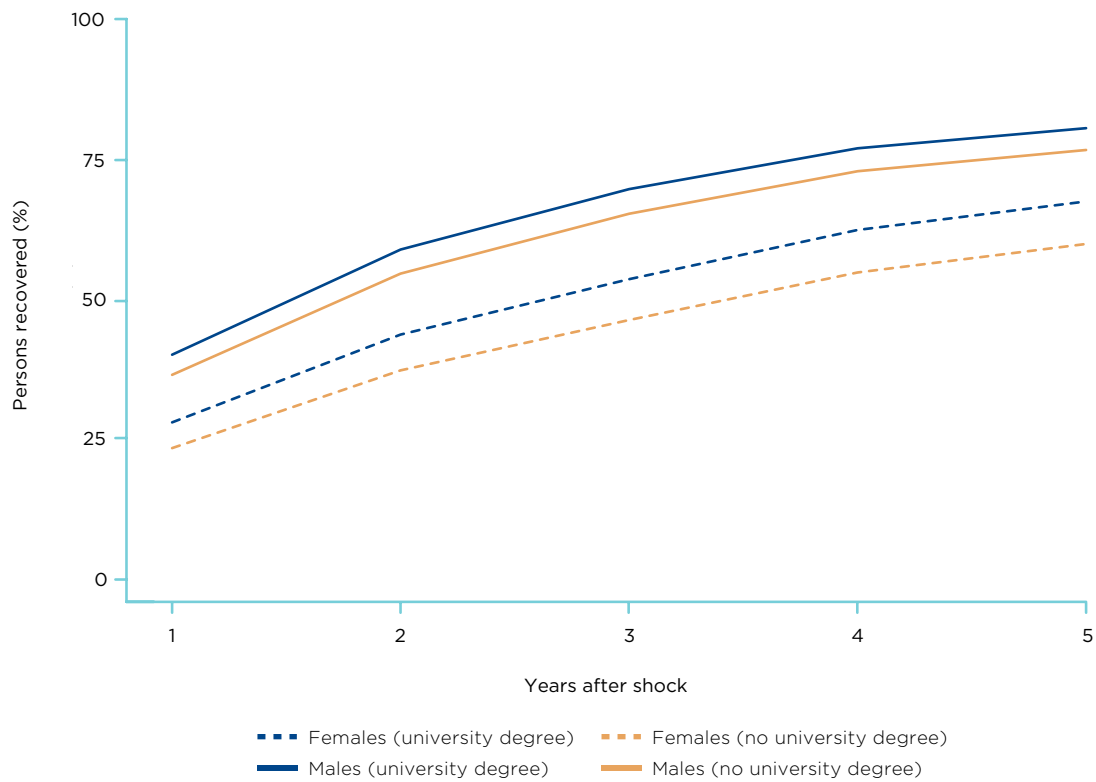
percent within a year and 70 percent within three years compared to 37 percent and 65 percent for males with no university qualification. The recovery rates are 28 percent within a year and 54 percent within three years for females with university qualifications and 24 percent within a year and 47 percent within three years for females with no university qualifications.

Figure 9.10 shows that a disability increases the probability of experiencing an earnings shock. More than 8 percent of males and females with a disability experience an earnings shock, compared to 3.8 percent of males and 6.5 percent of females who have not reported a disability. Disability may have a long-lasting effect on a worker's productivity. Figure 9.12 illustrates that having a disability reduces recovery rates for males and females. The 1-year rate for males with a disability is 33 percent and the three-year rate is 60 percent. The corresponding rates for males not reporting a disability are 39 percent and 68 percent. The three-year recovery rate is 44 percent for females with a disability and 51 percent for females not reporting a disability.

25 Note that the recovery rates observed using the respondents in the HILDA Survey are, on average, higher than those observed using the sample in the ALife data.

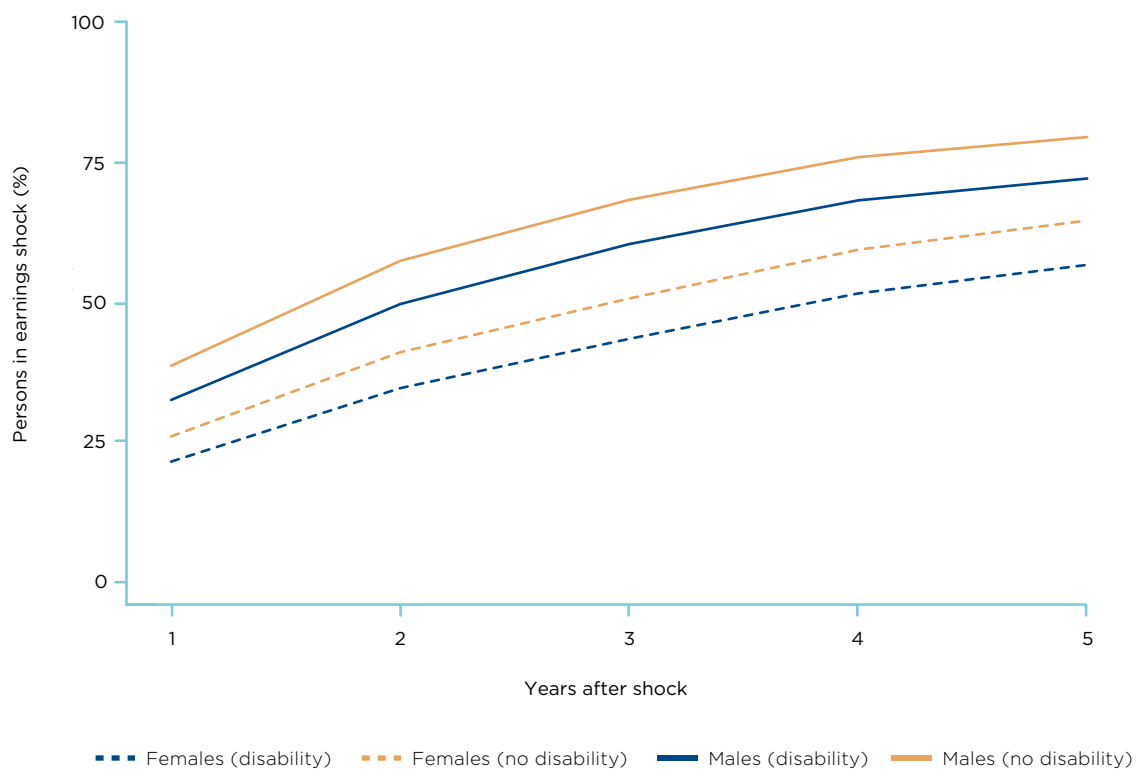


**Figure 9.11. Predicted recoveries from an earnings shock, by education and gender**



Notes: Predicted recovery rates are estimated from a Cox regression model. The model estimates the probability of recovering from the shock after t years given that the person has not recovered after t-1 years. Covariates are family type, macroeconomics period, earnings squared, age, age squared, depth of the shock, an indicator for a losing 100 percent of earnings.

**Figure 9.12. Predicted recoveries from an earnings shock, by disability status and gender**



Notes: Predicted recovery rates are estimated from a Cox regression model. The model estimates the probability of recovering from the shock after t years given that the person has not recovered after t-1 years. Covariates are family type, macroeconomics period, earnings squared, age, age squared, depth of the shock, an indicator for a losing 100 percent of earnings.

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## 9.4

### Summary



Earnings shocks and recovery rates differ substantially by family composition, educational attainment and participation, and disability status. Males who have a partner are less likely to experience an earnings shock, suggesting that they may aim at earnings stability as a response to the responsibilities of providing for a family. Childbirth, and having dependent children more generally, increases the probability of earnings shocks and slows recoveries of young females. University education improves skills and provides qualifications that people can use in the labour market. The increase in productivity due to education reduces the probabilities of falling into shock and increases the pace of recoveries. Disability may deteriorate skills and capacity to work, reducing productivity. Females and males with a disability have higher earnings shock rates and lower recovery rates.

Our findings suggest that policies that help females with children balance work and family duties, increase educational attainment and reduce employment barriers faced by people with disability will reduce the prevalence of earnings shocks and increase the rate of recovery from these shocks. The analysis presented here does not, however, provide guidance on the specific form these policies should take.