



The Household, Income and Labour Dynamics in Australia Survey: Selected Findings from Waves 1 to 12



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1

Introduction

The HILDA Project

Commenced in 2001, the Household, Income and Labour Dynamics in Australia (HILDA) Survey is a nationally representative longitudinal study of Australian households. The study is funded by the Australian Government Department of Social Services (DSS; previously Department of Families, Housing, Community Services and Indigenous Affairs) and is managed by the Melbourne Institute of Applied Economic and Social Research at the University of Melbourne. Roy Morgan Research has conducted the fieldwork since Wave 9 (2009), prior to which The Nielsen Company was the fieldwork provider.

The HILDA Survey seeks to provide longitudinal data on the lives of Australian residents. It annually collects information on a wide range of aspects of life in Australia, including household and family relationships, child care, employment, education, income, expenditure, health and wellbeing, attitudes and values on a variety of subjects, and various life events and experiences. Information is also collected at less frequent intervals on various topics, including household wealth, fertility-related behaviour and plans, relationships with non-resident family members and non-resident partners, health care utilisation, eating habits and retirement.

The important distinguishing feature of the HILDA Survey is that the same households and individuals are interviewed every year, allowing us to see how their lives are changing over time. By design, the study can be infinitely lived, following not only the initial sample

members for the remainder of their lives, but also the lives of their children and grandchildren, and indeed all subsequent descendants. Household longitudinal data, known as panel data, provide a much more complete picture than cross-sectional data because they document the life-course each person takes. Panel data tell us about *dynamics*—family, income and labour dynamics—rather than *statics*. They tell us about *persistence* and *recurrence*, for example, of poverty, unemployment or welfare reliance. Perhaps most importantly, panel data can tell us about the antecedents and consequences of life outcomes, such as poverty, unemployment, marital breakdown and poor health, because we can see the paths that individuals take to arrive at these outcomes and the paths they take subsequently. Indeed, one of the valuable attributes of the HILDA panel is the wealth of information on a variety of life domains that it brings together in one dataset. This allows us to understand the many linkages between these life domains; to give but one example, we can examine the implications of poor health for risk of poor economic outcomes.

Panel data are also important because they allow causal inferences in many cases that are more credible than what other types of data permit. In particular, statistical methods known as ‘fixed effects’ regression models can be employed to examine the effects of various factors on life outcomes such as earnings, unemployment, income and life satisfaction. These models can control for the effects of stable characteristics of





individuals that are typically not observed, such as innate ability and motivation, and which confound estimates of causal effects in cross-sectional settings.

This report

This report presents brief statistical analyses of the first 12 waves of the study, which were conducted between 2001 and 2012. It examines nine topics: family life; economic wellbeing; labour market outcomes; health and subjective wellbeing; cognitive activity and cognitive ability; education and labour market outcomes; family background and economic wellbeing; expenditure on food; and sexual identity. As wide-ranging as these topics are, this report should be viewed as containing only ‘selected findings’. Each of the topics is covered in a cursory fashion, and there are many other topics that can be examined with the data. The HILDA Survey is an extremely rich data source, and testament to this is the large number of publications on a diverse range of topics. Further details on these publications are available on the HILDA Survey website at <http://www.melbourneinstitute.com/hilda/biblio/> and on the DSS website at <http://flosse.fahcsia.gov.au/>.

Most of the analysis presented in this report consists of graphs and tables of descriptive statistics that are reasonably easy to interpret. However, several tables in this report contain estimates from regression models. These are less easily interpreted than tables of descriptive statistics, but are included because they are valuable for better understanding the various topics examined in the report. In particular, a regression model provides a clear description of the statistical relationship between two factors, *holding other factors constant*. For example, a regression model of the determinants of earnings can show the average difference in earnings between disabled and non-disabled employees, holding constant other factors such as age, education, hours of work, and so on (i.e., the average difference in earnings when people do not differ in other characteristics). Moreover, under certain conditions, this statistical association can be interpreted as a causal relationship, showing the effects of the ‘explanatory variable’ on the ‘dependent variable’. Various types of regression models have been estimated for this report, and while these models are not explained in depth, brief outlines of the intuition for these models and how to interpret the

estimates are provided in the Technical Appendix.

The Technical Appendix also provides details on the HILDA Survey sample and the population weights supplied in the data to correct for non-response and attrition. These weights are used in all our analysis so that all statistics represent estimates for the Australian population. Note also that the estimates based on the HILDA Survey, like all sample survey estimates, are subject to sampling error. As explained in more detail in the Technical Appendix, for tabulated results of descriptive statistics, we have adopted an Australian Bureau of Statistics (ABS) convention and marked with an asterisk (*) estimates which have a relative standard error—the standard error relative to the size of the estimate itself—of more than 25%. Note that a relative standard error of less than 25% implies there is a greater than 95% probability that the true quantity lies within 50% of the estimated value. For regression model parameter estimates presented in this report, estimates that are not statistically significantly different from 0 at the 10% level are marked with a ‘plus’ superscript (+). Estimates that are statistically significant at the 10% level have a probability of not being 0 that is greater than 90%.

2

Family life¹



The HILDA Survey is uniquely placed to provide us with an understanding of family life in Australia. Every year, a considerable amount of information is collected on various aspects of family life, including household structures, how parents cope with parenting responsibilities, and perceptions of and attitudes to the roles of household members. The collection of this information from the same individuals each year allows us to investigate how and why family circumstances change over time—partnering and marriage, separation and divorce, childbirth, adult children leaving the family home, and indeed any other change to the composition or nature of family circumstances.

In this chapter, analyses are presented for the 2001 to 2012 period on three family-life topics: partnering and separation; families with dependent children; and adult children living with their parents.

Partnering and separation

While the marital status profile of the Australian population, and how it has changed over time, is reasonably well understood, the HILDA Survey data provide the opportunity to examine the experiences at the individual level of changes to marital status over time. In this section, we present a brief analysis of the patterns of partnering and separation experienced by individuals.

Before turning to longitudinal analysis, Table 2.1 provides cross-sectional ‘snapshots’ of the marital status of the population in 2001, 2006 and 2012, disaggregated by sex and age group. Legal marriages (‘married’) are distinguished from de facto marriages (‘de facto’), where the latter category refers to people living with a partner but not legally married. A trend decline in the proportion of the population who are married is evident, to a significant extent mirrored by growth in de facto marriages. For men, the proportion married declined from 56.2% in 2001 to

53.2% in 2012, while the proportion de facto married rose from 9.2% to 11.8%. For women, the proportion married declined from 54.4% in 2001 to 51.4% in 2012, while the proportion de facto married rose from 9.1% to 11.5%. Significantly, for men, the decline in marriage is predominately among those aged 40 and over, whereas for women the decline is evident in all age ranges. Growth in de facto marriages is evident for all age groups for both men and women.

Individuals’ experiences of partnering and separation

Taking a longitudinal perspective, in Table 2.2 we examine partnering by single people, and marriage by unmarried people, over a 5-year period. The first two columns present the proportions of single people who moved in with a partner, disaggregated by sex and by age group at the start of the 5-year window. The last two columns present the proportions of unmarried people who got married, likewise disaggregated by sex and age group.

Two pooled periods are examined: the 5-year periods beginning in

¹ Thanks to Markus Hahn for undertaking the statistical analysis for this chapter.

Table 2.1: Marital status by sex and age group (%)

	2001		2006		2012	
	Married	De facto	Married	De facto	Married	De facto
Men						
18–24	3.6	9.0	2.4	8.9	1.8	9.6
25–29	25.9	20.6	24.9	23.5	27.4	24.6
30–34	50.0	14.6	49.5	20.0	50.5	18.6
35–39	58.8	12.4	59.8	13.5	59.2	16.8
40–49	69.3	8.8	62.8	11.3	63.3	12.3
50 and over	76.4	4.1	75.6	4.8	71.4	6.5
Total	56.2	9.2	55.1	10.6	53.2	11.8
Women						
18–24	8.2	15.4	8.2	15.8	5.6	18.4
25–29	36.5	19.1	35.8	24.5	35.2	23.7
30–34	60.7	14.5	55.3	17.1	54.0	15.6
35–39	67.2	11.8	65.6	12.4	64.0	15.6
40–49	67.0	8.0	65.3	9.7	65.7	11.4
50 and over	61.8	2.9	61.5	3.6	58.9	5.0
Total	54.4	9.1	53.5	10.2	51.4	11.5

2001, 2002 and 2003; and the 5-year periods beginning in 2005, 2006 and 2007. Thus, for the first pooled period, everyone who was single in 2001 is examined over the period to 2006, everyone who was single in 2002 is examined over the period to 2007 and everyone who was single in 2003 is examined over the period to 2008. Note, therefore, that a person who was single in 2001, 2002 and 2003 would be represented three times in the data used to produce the estimates for the 2001 to 2003 pooled period.

For both men and women, rates of partnering and marriage are strongly ordered by age. The peak age group for both partnering and marriage is 25–29, with rates then declining with age (with the minor exception that, in the 2005 to 2007 period, the partnering rate for women was similar across the 18–24, 25–29 and 30–34 age groups). Comparing the two pooled periods, there are indications of declines in partnering and marriage among those aged 18–29, and increases among those aged 30–34.

Table 2.3 presents the counterpart to Table 2.2, showing the proportion of de facto married

people becoming single, and the proportion of legally married people becoming single, over a 5-year period. Most commonly, a person will become single due to separating, but some people, particularly in the older age groups,

will become single because their partner died. Also note that a person who is partnered in one wave and in the next wave is partnered with a different person is deemed to have ‘become single’, although it is of course possible

Table 2.2: Percentage of unpartnered people partnering within 5 years, and percentage of unmarried people marrying within 5 years, by age group

	A. Initially not partnered: Moved in with a partner		B. Initially not legally married: Got married	
	2001–2003	2005–2007	2001–2003	2005–2007
Men				
18–24	42.2	41.8	18.6	16.1
25–29	49.5	43.9	32.6	30.6
30–34	32.3	35.8	20.7	26.7
35–39	30.3	24.5	16.2	14.3
40–49	24.2	23.2	13.3	13.8
50 and over	14.2	11.6	9.8	6.8
Total	33.2	31.1	18.4	17.0
Women				
18–24	50.9	48.6	23.9	22.8
25–29	53.8	48.2	36.2	38.8
30–34	35.6	48.5	22.9	26.4
35–39	28.6	30.7	16.2	12.0
40–49	19.8	21.4	13.1	9.6
50 and over	3.6	7.3	2.2	4.3
Total	25.6	28.0	15.9	16.2

Notes: Persons not initially partnered (Panel A) includes married people separated from their spouse. Persons not legally married (Panel B) includes people living with a partner (i.e., de facto married).

that at no stage was the person actually single.

Perhaps not unexpectedly, de facto couples are more likely to separate than married couples. In contrast to the findings for partnering and marriage, there is not a strong association between age and likelihood of separation. De facto couples aged 18–24 are considerably more likely to separate than older de facto couples, but otherwise rates of separation are not substantially different across the age groups.

Figure 2.1 shows more precisely how long de facto and legal marriages survive, presenting ‘empirical survival functions’ for legal marriages and de facto marriages commencing between 2001 and 2011. Each line represents the proportion still living together at each year of duration of marriage—that is, the survival rate, where a marriage is deemed to ‘die’ once the first separation has occurred. Note that de facto marriages are treated as continuing (‘surviving’) if the partners become legally married.

Consistent with Table 2.3, de facto marriages are less likely to survive to each duration. For example, at four years duration, 74% of de facto couples are still together, compared with over 90% of married couples. At 11 years duration, 57% of de facto couples are still together, compared with 80% of married couples. In general, the longer the relationship, the lower the likelihood it will end in any given year. This is reflected in the slope of the survival function tending to decrease as relationship duration increases.

Factors affecting marital breakdown

In Table 2.4, the characteristics and events associated with marital breakdown are investigated. The table presents ‘hazard ratio’ estimates from hazard models of the probability of separation of the

Table 2.3: Percentage of partnered people becoming single within 5 years, by age group

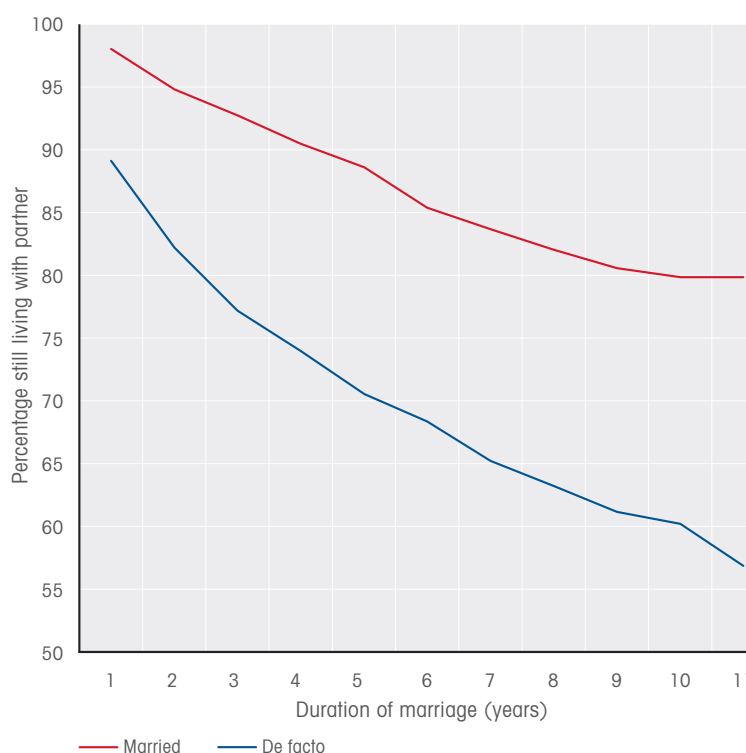
Initial years:	Initially de facto married		Initially legally married	
	2001–2003	2005–2007	2001–2003	2005–2007
Men				
18–24	39.2	37.1	*26.1	*11.7
25–29	29.8	17.0	13.1	11.4
30–34	23.6	17.7	12.2	9.8
35–39	27.2	32.1	10.8	8.7
40–49	23.4	19.9	8.2	7.9
50 and over	19.9	13.5	5.7	4.6
Total	26.4	21.4	8.1	6.7
Women				
18–24	38.4	34.3	12.3	13.5
25–29	26.8	16.8	11.0	11.7
30–34	20.8	22.0	10.5	9.2
35–39	20.3	25.6	7.4	11.3
40–49	21.6	16.9	9.9	7.0
50 and over	21.9	13.3	11.3	9.5
Total	25.7	21.4	10.4	9.3

Note: * Estimate not reliable.

partners. The models essentially show the effects of factors on the probability that the marriage ends in a given year. A hazard ratio estimate of greater than 1

indicates a positive association between the explanatory factor and the likelihood of marital breakdown, while an estimate of less than 1 indicates a negative association.

Figure 2.1: Marriage survival rates



(See the Technical Appendix for more information on hazard models.) Two models are presented, one for legal marriages and the other for de facto marriages. The ‘unit of analysis’ is the marriage, and the respective samples of the two models are all legal marriages observed in the 2001 to 2011 period, and all de facto marriages observed in the 2001 to 2011 period.

The estimated models include a set of factors separately measured for the male and female members of the couple, as well as factors defined for the marriage. For both legal and de facto marriages, no statistically significant effects are evident for previous marriage or labour force status of either the male or female member of the couple. Measures of health (see Box 5.1, page 51) included in the models show that poor general health of either member of the couple is not a significant factor, but poor mental health of either member of the couple is a strong

Box 2.1: Personality measures in the HILDA Survey

Waves 5 and 9 of the HILDA Survey included a short version of Saucier’s (1994) ‘Big 5’ personality test, from which personality scores are derived for extroversion, agreeableness, conscientiousness, emotional stability, and openness to experience. Administered in the self-completion questionnaire, the personality test involved respondents indicating the extent to which each of 36 words described them. The scores were derived using a process called principal components analysis. See Summerfield et al. (2013) for more information on the derivation of the scores. In this report, the personality scores are assumed to be fixed for each individual at the average values over Waves 5 and 9.

predictor of marital breakdown, in all cases approximately doubling the probability of separation in any given year.

Personality measures (see Box 2.1, above) show statistically significant effects of female conscientiousness and emotional stability in legal marriages, but not in de facto marriages, and statistically significant effects of male conscientiousness and emotional stability in de facto marriages, but not in legal marriages. In both cases, greater conscientiousness increases the probability of separation, while greater emotional stability decreases the probability of separation. Male openness to experience is also associated with a higher probability

of separation in legal marriages, but not de facto marriages.

Each year, the self-completion questionnaire contains a life events ‘inventory’, asking whether each of 21 events (22 since Wave 9) have occurred in the last 12 months. Variables for the following three life events are included in the models: victim of physical violence (e.g., assault); a major improvement in financial situation (e.g., won lottery, received an inheritance); and, a major worsening in financial situation (e.g., went bankrupt). The variable in respect of physical violence is defined separately for the two members of the couple and is an indicator for experience of physical violence within the last two years. This is a very strong predictor of separation for females, particularly in legal marriages, and male experience of physical violence is also a predictor in legal marriages. The strong effect evident for this factor may be because the perpetrator of the violence was, in many cases, the partner from whom the individual separated.

The model for legal marriage includes an indicator variable for whether the couple lived together before they got married—that is, were in a de facto marriage. The estimate indicates a positive association with marital breakdown, but it is not statistically significant. The duration of the relationship is not a significant factor for de facto marriages, but legal marriages are substantially less likely to end within the first three years than at longer durations. The presence of a dependent child significantly increases the likelihood of separation for legal marriages.

Box 2.2: Importance of religion

In Waves 4, 7 and 10, the self-completion questionnaire contained a sequence of questions on religious affiliation, frequency of attendance at religious services, and the importance of religion in one’s life. The importance of religion was ascertained by the question: *On a scale from 0 to 10, how important is religion in your life?* In this report, for Waves 4 to 12, individuals are assigned their most recently reported value, while in Waves 1 to 3, they are assigned the value reported in Wave 4.



Table 2.4: Factors impacting on marital breakdown—Hazard ratios

	Legal marriage		De facto marriage	
	Male characteristics	Female characteristics	Male characteristics	Female characteristics
Previously married	1.01+	1.19+	1.10+	1.06+
<i>Labour force status (Reference category: NILF)</i>				
Employed full-time in previous wave	0.71+	1.14+	0.67+	1.24+
Employed part-time in previous wave	0.67+	0.86+	0.83+	0.95+
Unemployed in previous wave	1.83+	1.39+	1.64+	1.24+
Poor general health (< 40)	1.02+	1.24+	0.90+	1.18+
Poor mental health (≤ 50)	2.30	1.79	2.67	2.38
<i>Personality</i>				
Extroversion	1.01+	1.00+	0.96+	1.04+
Agreeableness	1.04+	1.15+	0.89+	1.02+
Conscientiousness	1.08+	1.15	1.20	1.02+
Emotional stability	1.00+	0.88	0.85	0.95+
Openness to experience	1.23	0.90+	0.96+	1.04+
Victim of physical violence in last 2 years	1.84	6.42	1.24+	2.05
	Couple characteristics		Couple characteristics	
Lived together before got married	1.24+		–	
<i>Relationship duration (Reference category: < 3 years)</i>				
3–5 years	2.14		1.08+	
6–9 years	2.99		1.46+	
10–19 years	2.52		1.22+	
20 or more years	2.66		1.13+	
<i>Mean age of couple (Reference category: < 30)</i>				
30–39	0.56		0.70	
40–49	0.46		0.49	
50–59	0.29		0.32	
60 and over	0.23		0.30	
Have a dependent child	1.35		1.29+	
Major improvement in financial situation 1–2 years ago	0.72+		2.15+	
Major worsening of financial situation 1–2 years ago	0.66+		1.10+	
Born in different countries	1.06+		1.03+	
Male is 5 or more years older	1.12+		1.25+	
Female is 5 or more years older	1.31+		1.02+	
Male has higher educational attainment	1.16+		1.28+	
Female has higher educational attainment	1.22+		0.92+	
Religion important to both partners	1.08+		1.06+	
Religion important to only one partner	1.17+		2.72	
<i>Extent to which couple has traditional views on marriage and children</i>				
Mean of couple	0.95		0.97	
Absolute difference between partners	1.03		1.01+	
Extent to which male has more traditional views on parenting and work than female	1.00+		1.00+	
Absolute difference in personality	1.01+		1.02+	
One partner (only) smoker in previous wave	1.61		1.34	
One partner (only) regular drinker in previous wave	1.09+		0.98+	
Number of couples in sample	3,167		1,207	
Number of break-ups	269		196	

Notes: Table reports hazard ratios from Cox proportional hazards regression models. See the Technical Appendix for details. Samples comprise all legal/de facto marriages observed in the HILDA Survey period (2001–2012). *NILF*—Not in the labour force. + indicates estimate is not significantly different from 1 at the 10% level.



The dependent child estimate is similar in magnitude for de facto couples, but is not statistically significant.

The indicator variables included for major changes in financial situation relate to the 12 months leading up to the previous-wave interview—that is, one to two years prior to the

current wave—to ensure that the major change was not itself a result of the marital breakdown. Each variable is equal to 1 if either member of the couple reported the major change (and 0 otherwise). No significant effects are evident.

The remaining explanatory variables capture similarities and

differences between the partners in terms of country of birth, age, educational attainment, the importance of religion, attitudes to marriage and children and to parenting and paid work, personality, smoking and drinking. No significant effects are evident for differences in country of birth, age and educational attainment. Religion being important to both members of the couple (see Box 2.2, page 9) has no significant effects on the likelihood of separation, but if religion is important to only one member of a de facto couple, they are much more likely to separate.

Traditional views on marriage and children (see Box 2.3, at left) are associated with a lower probability of separation, while a greater difference in views on marriage and children is associated with a higher probability of separation in legal marriages, but not de facto marriages. No significant effects of differences in attitudes to parenting and paid work are found.

A measure of personality differences between the partners—simply the sum of the absolute differences in scores for each of the five dimensions—indicates personality differences do not impact on marital breakdown. The impacts of differences in smoking and drinking behaviour are captured by indicator variables for whether

Box 2.3: Attitudes to marriage and children, and to parenting and paid work

Attitudes to marriage and children, and to parenting and paid work, have been measured in Waves 5, 8 and 11. Views on marriage and children are ascertained by asking respondents the extent to which they agree, on a 7-point Likert scale, with each of the following nine statements: *a. It is alright for an unmarried couple to live together even if they have no intention of marrying; b. Marriage is a lifetime relationship and should never be ended; c. Marriage is an outdated institution; d. It is alright for a couple with an unhappy marriage to get a divorce even if they have children; e. A woman has to have children in order to be fulfilled; f. Children will usually grow up happier if they have a home with both a father and a mother; g. It is alright for a woman to have a child as a single parent even if she doesn't want to have a stable relationship with a man; h. When children turn about 18–20 years old they should start to live independently; and i. Homosexual couples should have the same rights as heterosexual couples do.* Assigning a score ranging from 1 to 7 to each response based on the extent of agreement with the statement, the measure of the extent to which views about marriage and children are 'traditional' that is used in this report is calculated as $(8 - a) + b + (8 - c) + (8 - d) + e + f + (8 - g) + h + (8 - i)$, potentially ranging from 8 to 56.

Views on parenting and paid work are ascertained by asking respondents the extent to which they agree, on a 7-point Likert scale, with each of the following 14 statements: *a. Many working mothers seem to care more about being successful at work than meeting the needs of their children; b. If both partners in a couple work, they should share equally in the housework and care of children; c. Whatever career a woman may have, her most important role in life is still that of being a mother; d. Mothers who don't really need the money shouldn't work; e. Children do just as well if the mother earns the money and the father cares for the home and children; f. It is better for everyone involved if the man earns the money and the woman takes care of the home and children; g. As long as the care is good, it is fine for children under 3 years of age to be placed in child care all day for 5 days a week; h. A working mother can establish just as good a relationship with her children as a mother who does not work for pay; i. A father should be as heavily involved in the care of his children as the mother; j. It is not good for a relationship if the woman earns more than the man; k. On the whole, men make better political leaders than women do; l. A pre-school child is likely to suffer if his/her mother works full-time; m. Children often suffer because their fathers concentrate too much on their work; and n. If parents divorce it is usually better for the child to stay with the mother than with the father.* In this report, a measure of the extent to which views about parenting and work are 'traditional' is calculated as $a + (8 - b) + c + d + (8 - e) + f + (8 - g) + (8 - h) + (8 - i) + j + k + l + (8 - m) + n$, potentially ranging from 14 to 98.

For both of the above measures, for Waves 5 to 12, individuals are assigned the value in the most recent wave, while in Waves 1 to 4, they are assigned the Wave 5 value.

(only) one partner was a smoker and whether (only) one partner was a regular drinker (three or more times per week), both measured in the previous wave to ensure that the smoking or drinking behaviour took place while the couple was together. The estimates indicate that differences in smoking behaviour matter, but differences in drinking behaviour do not.

Relationship satisfaction of partners

Each year, the self-completion questionnaire has contained a question asking respondents to rate, on a scale from 0 (completely dissatisfied) to 10 (completely satisfied), the extent to which they are satisfied with their partner.

Table 2.5 presents the mean ratings for men and women in 2001, 2006 and 2012, distinguishing de facto married and legally married couples. Two clear patterns are evident. First, men are on average more satisfied with their partners than women. Second, men and women in de facto marriages are on average more satisfied with their partners. That said, average ratings are very high, in all cases lying somewhere between 8 and 9.

Results of regression models of the determinants of relationship satisfaction (measured on the 0–10 scale), estimated for males and females separately, are presented in Table 2.6.

Unsurprisingly, the table shows that the differences between de facto

and legal marriages in relationship satisfaction evident in Table 2.5 derive from differences in other factors (such as duration of the relationship) rather than from the relationship types themselves. That is, holding other factors constant, there is no significant difference between de facto and legally married couples in relationship satisfaction for men or women. However, a number of the other factors considered in Table 2.6 are found to significantly impact on the relationship.

The length of the relationship impacts one’s satisfaction with it, although the effects differ slightly between de facto and legal marriages. For both men and women, the longer the duration of

Table 2.5: Mean satisfaction with relationship with partner (0–10 scale)

	2001		2006		2012	
	Men	Women	Men	Women	Men	Women
De facto	8.9	8.6	8.6	8.4	8.6	8.3
Married	8.5	8.3	8.4	8.3	8.5	8.2



the relationship, the lower is satisfaction, with the exception for legal marriages that satisfaction is slightly higher for those in the longest-duration category (20 or more years) compared with the second-longest duration category (10–19 years). The presence of dependent children also decreases relationship satisfaction, by 0.32 for men and 0.37 for women.

Age is not a strong predictive factor for men, with the exception that men aged 40–49 are, all else equal, significantly less satisfied with their partner. For women, relationship satisfaction is decreasing in age up to the 50–59 age category. An age difference of five or more years does not impact on men’s satisfaction, but women are, holding other factors constant, 0.23 less satisfied if their partner is five or more years older.

Compared with holding no post-school qualifications, a partner holding a university qualification acts to decrease satisfaction by 0.17 for men and 0.16 for women, while the partner holding any other post-school qualification also decreases men’s satisfaction by 0.21. The labour force status of both oneself and one’s partner also impact on relationship satisfaction, with unemployment of the man negatively impacting satisfaction of both members of the couple, and unemployment of the woman negatively impacting on her own relationship satisfaction (but not her partner’s satisfaction). Interestingly, employment—particularly of the female partner—is also a negative factor (compared with being out of the labour force) for relationship satisfaction of both men and women. However, given employment, there is no evidence of additional adverse effects of long (50 or more) hours of work. It also does not seem to matter how much one’s partner earns.

The health, and particularly mental health, of one’s partner is an important determinant of one’s

Table 2.6: Factors affecting relationship satisfaction

	Men	Women
Legally married	0.02+	-0.04+
<i>De facto relationship duration (Reference category: < 3 years)</i>		
3–5 years	-0.33	-0.43
6–9 years	-0.52	-0.57
10–19 years	-0.66	-0.85
20 or more years	-0.95	-0.90
<i>Marriage duration (Reference category: < 3 years)</i>		
3–5 years	-0.33	-0.34
6–9 years	-0.44	-0.52
10–19 years	-0.61	-0.62
20 or more years	-0.56	-0.50
Have a dependent child	-0.32	-0.37
<i>Age (Reference category: 18–29)</i>		
30–39	-0.05+	-0.13
40–49	-0.12	-0.40
50–59	-0.10+	-0.48
60 and over	0.02+	-0.34
Partner is 5 years or more older	-0.13+	-0.23
Partner is 5 years or more younger	-0.02+	0.01+
<i>Partner’s education (Reference category: Less than Year 12)</i>		
Degree	-0.17	-0.16
Other post-school	-0.21	-0.07+
Year 12	-0.09+	-0.04+
<i>Labour force status (Reference category: Not in the labour force)</i>		
Employed full-time	-0.09	-0.15
Employed part-time	-0.07+	-0.11
Unemployed	-0.18	-0.19
<i>Partner’s labour force status (Reference category: Not in the labour force)</i>		
Employed full-time	-0.08	0.03+
Employed part-time	-0.06	-0.01+
Unemployed	-0.09+	-0.18
Works 50 or more hours per week	-0.01+	0.01+
Partner works 50 or more hours per week	-0.01+	-0.01+
Partner’s annual personal labour earnings (\$’000, December 2012 prices)	0.00+	0.00+
Partner in poor general health (< 40)	-0.10	-0.07
Partner in poor mental health (≤ 50)	-0.38	-0.45
<i>Partner’s personality</i>		
Extroversion	0.00+	-0.01+
Agreeableness	0.07	0.14
Conscientiousness	0.03+	0.06
Emotional stability	0.10	0.10
Openness to experience	-0.04	-0.02+
<i>Absolute difference in...</i>		
Extroversion	0.00+	-0.01+
Agreeableness	-0.05	0.06
Conscientiousness	-0.02+	-0.01+
Emotional stability	0.00+	-0.04
Openness to experience	-0.03+	-0.09
Non-smoker and partner is a smoker	-0.34	-0.20
Non-regular drinker and partner is regular drinker	-0.05+	-0.03+
Major improvement in financial situation	-0.07+	0.07+
Major worsening of financial situation	-0.35	-0.32
Constant	8.62	8.07
Number of observations	30,808	30,973

Notes: Table reports coefficient estimates from linear random-effects regression models. See the Technical Appendix for details. Sample comprises all partnered people and estimation is on all 12 waves (2001–2012). + indicates estimate is not significantly different from 0 at the 10% level.

relationship satisfaction. The effects are similar for men and women, with poor general health of the partner decreasing relationship satisfaction by approximately 0.1, and poor mental health decreasing it by approximately 0.4.

The personality of one’s partner also appears to matter, and to some extent so do *differences* between the partners in personality. Greater agreeableness and emotional stability of one’s partner increases satisfaction, while greater conscientiousness of the male partner increases women’s satisfaction, and greater openness to experience of the female partner *decreases* men’s satisfaction.

The effects of differences in personality are quite different for men and women. For men, greater difference in agreeableness acts to decrease relationship satisfaction, while differences in the other traits do not significantly affect their satisfaction. For women, greater differences in emotional stability and openness to experience act to decrease relationship satisfaction, but greater difference in agreeableness acts to *increase* satisfaction. Collectively, the effects of partner’s agreeableness and differences from partner in agreeableness imply women’s satisfaction is increasing in partner’s agreeableness, and the gain is higher the less agreeable the woman herself. For emotional stability, by contrast, the estimates imply women’s

satisfaction is highest when both she and her partner score highly for emotional stability.

Similar to the findings with respect to marital breakdown (Table 2.4), being a non-smoker and having a partner who smokes lowers relationship satisfaction, by 0.34 for men and 0.20 for women, while differences in drinking behaviour do not seem to matter. Finally, a major improvement in financial situation does not affect relationship satisfaction, but a major worsening of financial situation has large negative effects, decreasing satisfaction by approximately 0.3 for both men and women.

Families with dependent children

Table 2.7 presents basic descriptive information for 2001, 2006 and 2012 on the proportion of people who are parents living with dependent children (see Box 2.4, below), disaggregated by age group and by whether the youngest dependent child is under 18 or aged 18–24. Just over 30% of people aged 15 and over are parents living with dependent children. This proportion remained relatively steady over the 2001 to 2012 period, although the

proportion with the youngest child aged under 18 declined, and the proportion with the youngest dependent child aged 18–24 increased, rising from 1.5% in 2001 to 3.0% in 2012. Also evident is that the average age of parents over this period has increased. For example, in 2001, 42.7% of those aged 25–34 were parents with dependent children under 18, but in 2012 this had fallen to 35.6%. Over the same period, the proportion of those aged 45–54 who were parents with dependent children aged under 18 increased from 35.7% to 41.5%.

Table 2.8 presents descriptive information on dependent children. Consistent with the estimates presented in Table 2.7, the percentage of those aged 18–24 who are dependent children rose substantially between 2001 and 2012, from 15.8% to 26.6%. The table also shows the proportion of children aged under 18 living in lone-parent families. Perhaps contrary to popular perception, this has fallen between 2001 and 2012, from 20.4% to 18.6%. The average age of children living in lone-parent families has also risen: the proportion of children aged under 6 living in lone-parent families has decreased substantially, from 18.3% to 13.8%, while the

Box 2.4: Dependent children

The definition of a dependent child used in this report follows the Australian Bureau of Statistics approach (see Australian Bureau of Statistics, 1995). According to this definition, a dependent child is: (1) any child under 15 years of age; or (2) a child aged 15–24 who is engaged in full-time study, not employed full-time, living with one or both parents, not living with a partner, and who does not have a resident child of their own.

Table 2.7: Percentage of people who are parents with dependent children, by own age and age of youngest child

	2001			2006			2012		
	Age of youngest child			Age of youngest child			Age of youngest child		
	< 18	18–24	Total	< 18	18–24	Total	< 18	18–24	Total
15–24	5.5	*0.0	5.5	5.2	*0.0	5.2	4.2	*0.0	4.2
25–34	42.7	*0.0	42.7	39.0	*0.0	39.0	35.6	*0.0	35.6
35–44	68.9	*0.8	69.7	67.4	*0.5	67.9	68.9	1.3	70.2
45–54	35.7	5.5	41.2	38.4	8.9	47.3	41.5	9.1	50.6
55 and over	2.4	1.5	3.9	2.7	2.4	5.1	3.7	4.0	7.7
Total	29.3	1.5	30.8	27.8	2.4	30.2	27.3	3.0	30.3

Note: * Estimate not reliable.

Table 2.8: Dependent children

	2001	2006	2012
Percentage of people aged 18–24 who are dependent children	15.8	22.8	26.6
Percentage of dependent children under 18 living in a lone-parent family			
Aged under 6	18.3	14.7	13.8
Aged 6–12	22.4	21.5	20.2
Aged 13–17	20.1	23.9	22.8
All aged under 18	20.4	19.9	18.6

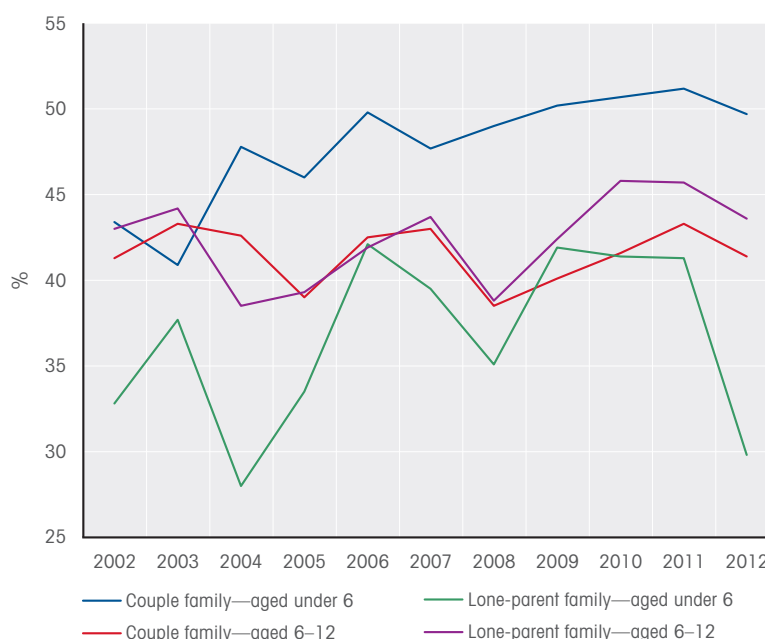
proportion of children aged 6–12 living in lone-parent families has decreased from 22.4% to 20.2%, and the proportion of children aged 13–17 living in these families has actually risen from 20.1% to 22.8%.

Child care use for children aged under 13

Child care has been a significant public policy issue for some years now, largely because of the steady growth in female employment participation since the 1970s. While government subsidies for child care are significant, there is little doubt that access to affordable and high quality child care looms large in the minds of many parents with young children. Figure 2.2 and Tables 2.9 and 2.10 attest to this, providing cross-sectional information on child care used for children aged under 13 and the difficulties faced by parents in obtaining child care.

Figure 2.2 shows work-related child care (see Box 2.5, at right) is used for approximately 40–45% of children aged 6–12, with rates of use similar for couple families and lone-parent families. For children aged under 6, use of work-related child care is considerably higher in couple families than in lone-parent families. There is no clear trend in child care use over the 2002 to 2012 period for children aged 6–12 or for children aged under 6 living in lone-parent families. However, there is a clear trend rise in the proportion of couple families using work-related child care for children under 6, rising from approximately 40% in 2003 to approximately 50% in 2012.

Figure 2.2: Proportion of children for whom work-related child care is used, by family type and age of child



Box 2.5: Types of child care

In this report, distinctions are drawn between work-related and non-work-related child care, and between formal and informal child care. Work-related child care is child care which is used while the parents are engaged in paid employment. Non-work-related child care refers to all other child care. Formal care refers to regulated care away from the child's home, such as before or after school care, long day care, family day care, and occasional care. Informal child care refers to non-regulated care, either in the child's home or elsewhere. It includes (paid or unpaid) care by siblings, grandparents, other relatives, friends, neighbours, nannies and babysitters.

Table 2.9 shows the types of work-related child care used in 2012 for children not yet at school, children at school aged less than 10, and children at school aged 10–12. For children not yet at school for whom work-related child care is used, informal child care, most commonly comprising a parent, a partner of a parent, or a grandparent, is used for 68.1% of children, while formal child care, most commonly a private or community long day centre, is used for 69.1% of children. For children at

school but aged less than 10 (for whom work-related child care is used), informal care is used for 83.2% during term time and 92.9% during school holidays. As with children not yet at school, informal care mostly consists of a parent, parent's partner or a grandparent, although significant numbers of children at school aged under 10 also receive informal care from others, including a relative living elsewhere, a friend or neighbour, a sibling or the child himself or

Table 2.9: Types of care used for children for whom work-related child care is used, 2012 (%)

	Children not yet at school	Children at school aged less than 10		Children at school aged 10–12	
		During term time	During school holidays	During term time	During school holidays
Informal child care					
Me or my partner	37.6	41.3	69.6	39.1	58.4
Child's brother or sister	*0.3	7.2	5.2	19.7	14.5
Child looks after self	–	8.0	4.3	25.2	17.5
Child comes to my workplace	–	3.5	3.8	*4.0	*4.3
Child's grandparent who lives with us	7.2	*2.9	*3.3	*2.5	*1.7
Child's grandparent who lives elsewhere	26.7	26.4	36.0	27.3	37.9
Other relative who lives with us	*0.2	*1.6	*1.0	*1.1	*0.6
Other relative who lives elsewhere	9.3	9.8	11.0	8.0	12.6
A friend or neighbour coming to our home	2.5	5.7	*1.0	*4.0	*1.0
A friend or neighbour in their home	3.7	13.5	12.0	7.1	13.4
A paid sitter or nanny	6.0	5.0	3.4	*3.0	*3.1
Any informal care	68.1	83.2	92.9	90.6	94.3
Formal child care					
Family day care	15.9	*1.9	*2.1	*1.9	*1.6
Formal outside of school hours care	–	32.1	–	20.0	–
Vacation care	–	–	25.5	–	18.9
Long day care at workplace	7.3	–	–	–	–
Private or community long day care centre	39.3	–	–	–	–
Kindergarten/pre-school	15.0	–	–	–	–
Any formal care	69.1	33.7	26.8	21.2	20.5

Notes: Multiple-response question; columns therefore do not add to 100. * Estimate not reliable.



Table 2.10: Difficulties with child care experienced by families who used, or thought about using, child care

Proportion of families experiencing difficulties with child care (%)

	2001	2004	2007	2010	2012
<i>Couple family</i>					
Availability	59.4	65.0	59.7	59.2	65.6
Quality	38.5	39.0	36.9	33.3	36.9
Cost	41.8	48.0	48.4	43.7	50.1
Any difficulty	67.2	72.0	70.0	65.9	73.3
<i>Lone-parent family</i>					
Availability	68.9	70.0	67.7	68.2	68.5
Quality	48.7	43.9	35.6	40.8	35.4
Cost	40.2	34.2	39.9	43.5	50.5
Any difficulty	75.9	72.3	72.6	74.4	78.1
One-year persistence of difficulties with child care (%)					
	2001	2004	2007	2010	2011
<i>Couple family</i>					
Availability	74.7	80.6	77.7	74.6	80.0
Quality	49.8	61.0	57.9	50.8	54.5
Cost	60.4	73.5	71.1	66.2	68.8
Any difficulty	78.9	84.8	82.6	81.5	84.7
<i>Lone-parent family</i>					
Availability	*85.8	*94.1	*87.9	*88.9	78.7
Quality	64.6	*74.0	*75.1	*72.8	45.1
Cost	49.5	*60.0	*85.4	*74.8	*72.2
Any difficulty	*85.1	*93.7	*91.2	*91.9	*85.1

Notes: The unit is the family where a family is defined by using one reference person. This allows tracking the 'family' over time. If a family is a couple family, the reference person is the female. If a family is a lone-parent family, the reference person is the lone parent. * Estimate not reliable.

herself. Formal care is used for 33.7% of these children during term time (mostly comprising formal care outside of school hours) and by 26.8% during school holidays (mostly comprising vacation care).

For children at school aged 10–12 for whom work-related child care is used, 90.6% receive informal care during term time and 94.3% receive informal care during school holidays. The informal care used is more evenly distributed across the different types, and for substantial numbers—25.2% during term time and 17.5% during school holidays—informal care used includes the child looking after himself or herself. Formal care is less commonly used for children aged 10–12, with it being used for 21.2% of the children in this age range who receive work-related child care during term time, and 20.5% of these children during school holidays.

In every wave of the HILDA Survey, parents who have used or thought about using child care in the last 12 months are asked to rate on a scale of 0 to 10 how much difficulty they have had in the past 12 months with each of 12 aspects of obtaining child care: (1) finding good quality care; (2) finding the right person to take care of your child; (3) getting care for the hours you need; (4) finding care for a sick child; (5) finding care during school holidays; (6) the cost of child care; (7) juggling multiple child care arrangements; (8) finding care for a difficult or special needs child; (9) finding a place at the child care centre of your choice; (10) finding a child care centre in the right location; (11) finding care your children are happy with; and (12) finding care at short notice.

In Table 2.10, these aspects are aggregated into three categories:

availability (3–5, 7–10, 12); quality (1, 2, 11); and cost (6). The proportion of children in households experiencing difficulties with each aspect is reported in the table, where a household is classified as experiencing difficulty with an aspect if they rate the extent of difficulty as 5 or more for any component of the aspect. For example, if a household scores 5 or more for any of aspects 3–5, 7–10, or 12, then the household is defined as having difficulty with the availability of child care.

The upper panel of the table reveals a consistent pattern of availability difficulties being the most common, affecting the households of at least half the children in households where the parents had used or thought about using child care. This is perhaps unsurprising, since availability difficulties account for

8 of the 12 types of difficulties households could report. The next most common difficulty is cost. In 2012, this affected the households of half of children for whom parents had used or thought about using child care. Difficulties with child care reached a peak in 2012, when difficulties with availability, quality and/or cost applied to 78.1% of children in lone-parent families and 73.3% of children in couple families.

Difficulties with child care are a cause for greater concern if they are not able to be resolved by families and therefore tend to persist over time. Persistence of difficulties from one year to the next, and how this has changed over the HILDA Survey period, is examined in the lower panel of Table 2.10. The estimates presented in the table are the proportion of children living in a household experiencing difficulties with an aspect of child care (availability, quality or cost) in the initial year (2001, 2004, 2007, 2010 and 2011) who were still living in a household experiencing difficulties with that aspect of child care in the next year. The population examined comprises children who were living in households in which the parents had used or thought about using child care in the last 12 months in both of the two years over which persistence is evaluated, and who were under the age of 13 in both years.

A relatively high degree of persistence of child care difficulties from one year to the next is evident. Persistence is highest for availability difficulties, but is nonetheless also very high for quality and cost difficulties, exceeding 50% in almost all cases examined in the table. Lone-parent families have somewhat higher persistence in availability difficulties than couple families, and generally have greater persistence in quality difficulties. No clear trends in

Box 2.6: Socio-Economic Index for Areas (SEIFA)

Constructed by the Australian Bureau of Statistics (ABS) using Census data, SEIFA is a suite of four indexes that can be used to explore different aspects of socio-economic conditions by geographic areas. For each index, every geographic area in Australia is given a SEIFA number which shows how disadvantaged that area is compared with other areas in Australia. In analysis presented in this report, the SEIFA index used is the *Index of Relative Socio-Economic Advantage and Disadvantage*, which is derived from Census variables such as low income, low educational attainment, unemployment, and dwellings without motor vehicles. For more information, see ABS (2009).

persistence are evident over the HILDA Survey period.

Children's education in 2012

Wave 12 of the HILDA Survey had a special focus on 'human capital', included as part of which was a question sequence in respect of each child in the household attending school in 2012. This sequence of questions collected information on the type of school, the amount of school fees, and subjective assessments of school experiences and prospects for attending university.

Table 2.11 draws on the information collected on school type and fees, presenting comparisons of enrolment, school fees and family characteristics across the three main school types in Australian education systems: government schools, Catholic schools, and other non-government schools. The table shows that 67.9% of primary-school children are enrolled in government schools, while 62.9% of high-school children are enrolled in government schools. Catholic schools account for 18.9% of primary-school enrolments and 21.3% of high-school enrolments, while other non-government schools account for 12.0% of primary school enrolments and 13.7% of high-school enrolments.

Unsurprisingly, school fees are paid for most students in non-government

schools. The mean annual school fee in 2012 was \$1,856 for primary-school students at Catholic schools, \$6,204 for primary-school students at other non-government schools, \$5,371 for high-school students at Catholic schools, and \$10,925 for high-school students at other non-government schools.

Substantial differences in students' family characteristics are evident across the three school types. The mean SEIFA decile (see Box 2.6, above), mean equivalised income (see Box 3.2, page 25) and proportions with parents holding university degrees are all highest for students of other non-government schools and lowest for students of government schools. The proportion living in a lone-parent household is also lowest for children in other non-government schools and highest for children in government schools. In all cases, differences across school types are more pronounced for high-school students than primary-school students.

Students in non-government high schools are also more likely than students in government schools to live in major urban areas (see Box 2.7, below), as are students in other non-government primary schools. However, primary-school children in Catholic schools are actually less likely to live in major urban areas than primary-school children in government schools.

Box 2.7: Classification of region of residence

There are various ways of characterising the region of residence of sample members. In this report, we primarily characterise regions by population density, classifying households into three categories: **major urban** (cities with populations of 100,000 or more); **other urban** (towns and cities with populations of 1,000 to 99,999); and **other regions** (towns with populations less than 1,000, and rural and remote areas). Note that some analysis in this report combines 'other urban' and 'other regions' into a single category.

Table 2.11: School fees and family characteristics by type of school—Children enrolled at school, 2012

	Primary school (Year 6 and below)			High school (Year 7 and above)		
	Government school	Catholic school	Other non-government school	Government school	Catholic school	Other non-government school
Percentage enrolled at school type ^a	67.9	18.9	12.0	62.9	21.3	13.7
School fees						
Percentage for whom school fees paid	–	98.6	98.9	–	98.3	99.7
Mean fee (\$)	–	1,856	6,204	–	5,371	10,925
Family characteristics						
Live in major urban area (%)	59.7	55.1	71.9	58.6	65.2	65.0
Mean SEIFA decile	5.2	5.9	6.5	4.8	6.2	6.9
Mean household equivalised income (\$)	42,176	49,474	59,276	39,303	51,831	58,721
Live in lone-parent household (%)	19.8	17.5	11.2	23.1	18.0	13.1
Mean number of school children in household	2.2	2.2	2.1	2.2	2.0	2.0
Mother has a university degree (%)	31.3	41.0	58.0	20.8	32.9	53.0
Father has a university degree (%)	27.4	40.8	60.8	19.5	34.1	55.1
One or more parents NESB immigrant (%)	19.3	23.3	25.0	19.2	25.5	20.2
One or more parents ESB immigrant (%)	13.8	9.9	22.1	19.1	20.0	17.6

Notes: In 2012, high school did not start in Queensland until Year 8, but Queensland children in Year 7 are nonetheless classified as in high school for the purposes of this table. ^a An ‘other’ school type was reported for 1.1% of primary-school children and 2.1% of high-school children.



The mean number of children in the household is fractionally lower for students of non-government schools. There is no strong pattern in the prevalence of immigrant parents across the school types, although children in non-government schools tend to be more likely to have an NESB immigrant parent (see Box 2.8, page 22).

Table 2.12 compares subjective assessments of school experiences, and outcomes and prospects for going to university, across school types and across boys and girls. The upper two panels are based on parent or guardian responses in respect of the school children in the household, while the bottom panel

is for school students aged 15 and over and is based on responses by the students themselves.

As in Table 2.11, clear differences across school types are evident. Subjective assessments of quality of education, school achievement, and likelihood of going to university are all highest for students in other non-government schools and lowest for students in government schools. Reported rates of experience of bullying and being contacted by the school because of poor behaviour are also ordered by school type, with the exception that parents of primary-school children in other non-government schools are more likely to have been contacted by the school because of poor behaviour

than parents of primary-school children in Catholic schools. Among students aged 15 and over, reported rates of skipping school and suspension or expulsion are higher for those in government schools, and similar for Catholic and other non-government school students. Worry about bullying is also more prevalent among students in government schools.

Examining differences between boys and girls, there are indications that boys do not fare as well as girls at school. Parents and guardians on average report worse educational outcomes and prospects for boys—the notable exception being the experience of bullying in high school, which appears to be worse for girls than

Table 2.12: Education outcomes of children at school, 2012

	By school type			By sex	
	Government	Catholic	Other non-government	Boys	Girls
Primary school (Year 6 and below): Parent or guardian responses for each child at school					
Mean satisfaction with education	7.8	8.0	8.3	7.9	7.9
School achievement excellent or above average (%)	52.1	57.4	67.4	49.9	60.3
Child will definitely or probably go to university (%)	57.8	74.8	81.3	58.2	70.0
Bullied at school (%)	27.4	23.8	19.1	26.6	24.8
Contacted by school because of poor behaviour (%)	12.7	7.6	10.1	17.3	5.3
High school (Year 7 and above): Parent or guardian responses for each child at school					
Mean satisfaction with education	7.3	7.9	8.2	7.4	7.6
School achievement excellent or above average (%)	45.3	59.6	67.7	45.3	58.4
Child will definitely or probably go to university (%)	49.1	74.3	77.3	54.4	63.2
Bullied at school (%)	21.7	15.2	11.1	16.4	21.5
Contacted by school because of poor behaviour (%)	24.3	11.8	11.5	25.9	13.1
Responses by those aged 15 and over attending school					
Skipped school without an excuse (%)	24.0	*9.2	*8.1	21.4	15.8
Suspended or expelled (%)	10.5	*1.4	*1.5	10.0	*3.8
Worry about bullying (%)	13.4	*9.7	*7.8	10.3	13.4

Note: * Estimate not reliable.

Table 2.13: Percentage of adult children living at home, by sex and age

	2001	2004	2007	2010	2012
Men					
18–21	74.8	78.7	81.1	82.1	81.7
22–25	39.8	47.9	53.8	51.2	52.1
26–29	20.1	27.5	26.7	27.8	24.2
Total	45.0	51.9	53.3	53.5	51.4
Women					
18–21	59.1	70.5	71.1	71.8	72.5
22–25	29.8	33.7	39.3	38.1	41.9
26–29	14.6	14.2	19.7	17.1	14.7
Total	34.0	39.4	43.2	41.8	41.3

Table 2.14: Adult children (aged 18–24) moving out of home and back home, by sex and age

	Men			Women		
	Over 1 year		Over 5 years	Over 1 year		Over 5 years
	2001–2003	2009–2011	2001–2003	2001–2003	2009–2011	2001–2003
Proportion of those living at home who move out of home (%)						
18–21	17.9	12.3	62.3	18.4	17.7	67.1
22–25	26.0	19.8	73.5	21.1	22.3	65.0
26–29	25.2	16.3	67.8	25.1	32.6	62.9
Total	21.5	15.5	66.7	20.0	21.3	65.9
Proportion of those living away from home who move back home (%)						
18–21	7.2	8.1	17.6	6.4	8.0	10.1
22–25	5.9	3.4	9.6	*2.5	3.0	5.5
26–29	*2.0	*1.5	5.6	*1.0	*1.3	3.3
Total	4.0	2.9	8.7	2.5	2.9	5.3

Note: * Estimate not reliable.

boys. Consistent with the parent and guardian reports, boys aged 15 and over at school are also more likely to report skipping school and being suspended or expelled, while girls are more likely to report being worried about bullying.

Adult children living with their parents

Table 2.8 showed that a significant, and increasing, proportion of those aged 18–24 years are dependent children, almost all of whom live with one or both parents. It therefore seems likely that the proportion of adults living in the parental home has likewise been growing over time. Table 2.13 shows the proportion of young adults—people aged 18–29—living in the parental home over the 2001 to 2012 period (where, in the case of separated parents, the parental home could be either parent’s home).

The table shows there has indeed been growth in the proportion of young adults living with their parents, although all of the growth appears to have occurred by around 2007, since when there has been a slight decline. In 2001, 45% of men aged 18–29 and 34% of women aged 18–29 were living with their parents, while in 2012, 51.4% of men and 41.3% of women in this age range were living with their parents. That women seem to leave the nest earlier than men probably reflects their propensity to partner at younger ages than men. As expected, the proportion living with their parents is highest for the youngest of the three age groups examined in Table 2.13, and lowest for the oldest age group.

While it is clear that a high proportion of young adults live with their parents, what is not clear from the cross-sectional snapshots presented in Table 2.13 is the extent of ‘fluidity’ between the parental home and other places of residence. For example, it is not

clear whether young adults tend to live with their parents until they move out, never to return, or whether they tend to move back and forth between the parental home and other places of residence. To investigate this question, in Table 2.14 we examine movements into and out of the parental home. The upper panel in the table shows, for those living at home, the proportion moving out over 1-year and 5-year time-frames, while the lower panel shows, for those living away from home, the proportion moving back home over the same time-frames.

Overall, it appears that most people move out once, never to return, with comparatively few people moving back home over a 1-year or 5-year time-frame. Nonetheless, the proportion moving back home is not insignificant: over a 5-year period, 8.7% of men and 5.3% of women aged 18–29 living away from the parental home move back in with their parents. Rates of return to the parental home are particularly sizeable for those aged 18–21, with 17.6% of men and 10.1% of women in this age group moving

back in with their parents over a 5-year period. Interestingly, over the 2001 to 2003 period, men had a similar propensity to women to move out of the parental home (be it over a 1-year or 5-year time-frame). However, they had a higher rate of return to the parental home, which explains why the proportion living with their parents in a given year was higher for men than women.

Characteristics associated with living in the parental home

The factors affecting whether young adults live with their parents are investigated in Table 2.15, which presents Probit regression model estimates of the probability an individual lives with his or her parents. Each estimate can be interpreted as the effect on the probability an individual lives in the parental home of a 1-unit increase in the value of the explanatory variable. In the case of an indicator (or dummy) variable, this is simply the effect of changing the variable from 0 to 1.

As expected, given the results presented in Table 2.13, age is an



important factor. For example, a male aged 28 or 29 is, all else equal, predicted to have a 0.38 lower probability of living with his parents than a male aged 18 or 19. A female aged 28 or 29 is similarly predicted to have a 0.37 lower probability of living with her parents

than a female aged 18 or 19. Living in a major urban area acts to decrease the probability of living with one's parents. Indigenous women are, all else equal, less likely to live with their parents than other native-born women, while NESB immigrant men and women

(see Box 2.8 below for the definition of NESB immigrants) are considerably more likely to live with their parents.

The educational attainment of the parents does not appear to affect the likelihood of living with one's parents, but an individual is considerably more likely to live in the parental home if the parents themselves live together. The presence of a disability (see Box 5.2 on page 54 for information on the disability measure used in this report) does not significantly affect the probability of living with one's parents (although the estimates are positive for both men and women). The only personality trait that appears to impact on likelihood of living in the parental home is conscientiousness, which is negatively associated with the likelihood of living at home—perhaps reflecting greater willingness of more conscientious people to take on the responsibilities that go with living away from one's parents.

Being a full-time student decreases the probability of living in the parental home for men, but not women. Curiously, while full-time employment reduces the probability of living in the parental home by 0.029 (compared with non-employment) for men, for women it actually increases this probability by 0.08. Part-time employment also increases the probability a woman lives with her parents, by 0.05 compared with non-employment. Higher personal income acts to decrease the probability of living with one's parents, which is likely to simply reflect the greater capacity of higher-income individuals to move out on their own.

Living with a partner substantially reduces the probability of living with one's parents, by 0.44 for men and by 0.38 for women, but having a dependent child has a large positive impact on the probability of living in the parental home for both men and women.

Table 2.15: Factors affecting whether one lives at home—Persons aged 18–29

	Men	Women
<i>Age (Reference category: 18–19)</i>		
20–21	–0.090	–0.127
22–23	–0.166	–0.205
24–25	–0.229	–0.257
26–27	–0.319	–0.299
28–29	–0.381	–0.371
Major urban area	–0.025	–0.016+
<i>Place of birth and Indigenous status (Reference category: Other Australian-born)</i>		
Indigenous	–0.046+	–0.079
ESB	–0.038+	0.002+
NESB	0.064	0.052
Both parents live together	0.096	0.097
One or more parents has a university degree	–0.022+	0.002+
Disabled with moderate or worse work restriction	0.024+	0.017+
<i>Personality</i>		
Extroversion	–0.012+	–0.011
Agreeableness	0.000+	0.007+
Conscientiousness	–0.014	–0.010
Emotional stability	0.000+	0.001+
Openness to experience	0.003+	0.005+
Full-time student	–0.052	0.005+
<i>Labour force status (Reference category: Not employed)</i>		
Employed full-time	–0.029	0.082
Employed part-time	–0.017+	0.051
Personal income (\$'000, December 2012 prices)	–0.001	–0.001
Partnered	–0.443	–0.383
Has a dependent child	0.309	0.264
Number of observations	11,100	12,106
Number of persons	2,134	2,311

Notes: Estimates are mean marginal effects obtained from random-effects Probit models. See the Technical Appendix for details. Sample comprises all persons aged 18–29 and estimation is on all 12 waves (2001–2012). + indicates estimate is not significantly different from 0 at the 10% level.

Box 2.8: Classification of place of birth and Indigenous status

An English-speaking background (ESB) immigrant is a person born in one of the 'main' English-speaking countries, which comprise the United Kingdom, United States, Canada, Ireland, New Zealand and South Africa. A non-English-speaking background (NESB) immigrant is a foreign-born person born in any other country.

Among people born in Australia, in some analysis in this report a distinction is drawn between people who self-identify as Aboriginal or Torres Strait Islander (Indigenous) and other people born in Australia.

3

Household economic wellbeing



Study of the distribution of income, and how an individual's income changes over time, is integral to understanding the economic fortunes of the Australian population. The HILDA Survey is the only nationally representative data source in Australia that has the capacity to provide information on both the distribution of income at a point in time and how incomes of individuals change over time. The HILDA Survey also regularly collects other information relevant to assessment of economic wellbeing, most notably collecting information on household expenditure and wealth. Moreover, in addition to objective financial data, information is regularly collected on the experience of financial stress, the ability to raise funds at short notice, perceived adequacy of household income, savings habits, saving horizon, attitudes to financial risk and satisfaction with one's financial situation.

This chapter contains three sections that focus on the income data, respectively examining the distribution and dynamics of household income, the prevalence and dynamics of income poverty, and the extent of welfare reliance.

Income levels and income inequality

Annual income

Cross-sectional estimates of mean and median household annual disposable income (defined in Box 3.1, page 24) are presented in Table 3.1. For this table, the household is the unit of observation, meaning that each household contributes one 'observation' to the calculation of the mean and the median.

Mean household disposable incomes have grown quite strongly for the in-scope population over the HILDA Survey period, increasing by \$18,997, or \$1,727 per year, expressed at December 2012 prices. The median has likewise grown, increasing by \$16,532. Growth was particularly strong between 2003 and 2009, when the mean increased by \$18,032, or 28.6%, and the median increased by \$17,164, or 31.4%. In the absence of substantial changes to household composition over the period—and the last two columns

of Table 3.1 would indicate there has been little change—this translates to a significant increase in average material living standards over this period.

Table 3.2 considers the distribution of household income, taking into account potential changes to household composition by examining 'equivalised' income per person. (See Box 3.2 on page 25 for an explanation of how equivalised income is calculated and Box 3.3 on page 26 for an explanation of the income distribution measures.) The individual is the unit of observation, meaning the statistics presented are for the distribution of household equivalised incomes across all individuals in the population, including children.

As expected, growth in the average level of incomes since 2003 is robust to the move to equivalised incomes and the individual as the unit of analysis, as there have been only modest changes in household composition of the population over this period. Broadly speaking, over the 2001 to 2012 period as a

Box 3.1: Measurement of household income in the HILDA Survey

The main household income measure examined in this report is 'real household annual disposable income'. Household annual disposable income is the combined income of all household members after receipt of government pensions and benefits and deduction of income taxes in the financial year ended 30 June of the year of the wave (e.g., 2001 in Wave 1). This is then adjusted for inflation—the rise in the general price level in the economy—using the Australian Bureau of Statistics Consumer Price Index, so that income in all waves is expressed at December 2012 prices, to give *real* income. Since prices tend to rise over time, real incomes are higher than the nominal incomes reported by sample members.

HILDA Survey respondents do not actually report their disposable income; rather, each respondent is asked how much income they received from each of a number of sources, including employment, government benefits, investments and any businesses they own. Total gross income of each individual is equal to the sum of these income components. The disposable income of each respondent is then calculated by estimating the income tax payable by the individual and subtracting this from the individual's total gross income. Disposable incomes of all household members are added together to obtain *household* disposable income. See Wilkins (2014) for details on the construction of gross income and the methods used to calculate disposable income. Note that, consistent with the Canberra Group's recommendations (see United Nations, 2011), large irregular payments received by individuals are excluded from income for the analysis presented in this report—that is, it is *regular* disposable income that is examined.



whole, income growth appears to have been something of a 'rising tide lifting all boats', with the three measures of inequality presented in Table 3.2 showing little net change between 2001 and 2012; that is, income growth has applied equally to low-, middle- and high-income persons.

Figure 3.1 compares median incomes across family types (defined in Box 3.4, page 27). A reasonably consistent ordering of median incomes by type of family is evident across the 12 waves of the survey, ranging from single elderly persons at the bottom to non-elderly couples without dependent children at the top. It also appears that there are three broad 'clusters' of family types: non-elderly couples without dependent children, who have the highest incomes; couples with children and non-elderly single persons, who have middle-level incomes; and lone-parent families and elderly people, who have low incomes. All family types have experienced growth in median incomes over the full period, although the extent of growth varies somewhat.

Long-term income

Friedman's (1957) permanent income hypothesis implies that what is important to an individual's living standard is not current income, but rather 'permanent' or (anticipated) lifetime income. Current income is affected by lifecycle stage and by transitory fluctuations and therefore is often not a good measure or reflection of permanent income. Of course, in practice, the stage of life at which income is received also matters, particularly since there is always uncertainty about future income streams. But the permanent income concept is nonetheless relevant and implies that even income measured over a 1-year interval may provide a misleading picture because of short-term fluctuations.

The longitudinal structure of the HILDA Survey data allows us to



address the limitations of current income by constructing measures of income over longer intervals of time than 1 year. In Table 3.3, the distribution of 5-year equivalised income is presented. Income is calculated for each individual as the sum of annual equivalised income (adjusted for inflation) over the 5-year period—that is, equivalised income is obtained for each of the 5 years and these five values are then added together. This has the effect of allowing for changes to household composition over time—for example, if total household income over the 5-year period was divided by the equivalence scale that prevailed in the first year, it could be misleading if the individual's household composition changed during the period examined.

Consistent with the presence of temporary fluctuations and lifecycle trends in incomes, the inequality measures in Table 3.3 indicate there is less inequality in the distribution of our measure of permanent income than in the distribution of 1-year income. The last column of Table 3.4 provides a summary measure of the relationship between inequality of permanent income and inequality of 1-year income. Specifically, it presents the ratio of the value of the Gini coefficient for 5-year income to the average value of the Gini coefficient for 1-year income over that 5-year period. Known as 'Shorrocks' R' (Shorrocks, 1978), this in fact provides a measure of income mobility. The closer this

Table 3.1: Household annual disposable incomes (December 2012 prices)

	Mean (\$)	Median (\$)	Number of households	Number of persons
2001	63,448	54,700	7,425,697	18,986,818
2002	63,231	54,863	7,535,509	19,218,072
2003	62,963	54,737	7,630,313	19,454,807
2004	65,210	56,473	7,696,203	19,684,566
2005	68,277	59,650	7,792,815	19,955,825
2006	72,335	62,095	7,917,587	20,265,863
2007	75,853	65,378	8,049,252	20,634,376
2008	78,524	67,471	8,184,394	21,069,248
2009	80,995	71,901	8,342,004	21,495,651
2010	81,214	69,530	8,459,863	21,799,276
2011	81,550	69,048	8,588,771	22,140,094
2012	82,445	71,232	8,771,960	22,513,334

Box 3.2: Equivalised income

Equivalised income is a measure of material living standards, obtained by adjusting household disposable income for the household's 'needs'. Most obviously, a household of four persons will require a higher household income than a lone-person household for each household member to achieve the same living standard as the lone-person household. There are, however, many factors other than household size that could be taken into account in determining need. These include the age and sex of household members, health and disability of household members (since poor health and/or disability increase the costs of achieving a given standard of living), region of residence (since living costs differ across regions) and home-ownership status (since the income measure does not usually include imputed rent for owner-occupiers).

In practice, it is common for adjustment of income to be based only on the number of adult and child household members, achieved by an equivalence scale. In this report, we have used the 'modified OECD' scale (Hagenaars et al., 1994), which divides household income by 1 for the first household member plus 0.5 for each other household member aged 15 or over, plus 0.3 for each child under 15. A family comprising two adults and two children under 15 years of age would therefore have an equivalence scale of 2.1 (1 + 0.5 + 0.3 + 0.3), meaning that the family would need to have an income 2.1 times that of a lone-person household in order to achieve the same standard of living. This scale recognises that larger households require more income, but it also recognises that there are economies of scale in 'household production' (e.g., the rent on a 2-bedroom flat is typically less than twice the rent on an otherwise comparable 1-bedroom flat) and that children require less than adults. Each member of a household is assigned the same equivalised income, the implicit assumption being that all household income is pooled and then shared equally.

Table 3.2: Distribution of individuals' equivalised household disposable income (December 2012 prices)

	Mean (\$)	Median (\$)	p90/p50	p50/p10	Gini coefficient
2001	37,756	32,978	1.95	2.10	0.308
2002	37,671	32,934	1.93	2.05	0.305
2003	37,730	33,445	1.89	2.07	0.303
2004	38,692	34,388	1.89	2.10	0.302
2005	40,647	35,513	1.92	2.05	0.303
2006	42,894	36,996	1.96	2.02	0.305
2007	45,353	39,135	1.96	2.14	0.316
2008	46,406	40,206	1.96	2.16	0.312
2009	47,996	43,084	1.84	2.18	0.297
2010	47,900	42,021	1.92	2.12	0.309
2011	48,290	42,092	1.96	2.12	0.313
2012	48,935	43,210	1.89	2.05	0.301

Box 3.3: Income distribution statistics

A variety of inequality measures are used in income distribution studies. In this report, estimates are presented for several commonly used measures. Average income levels are described by the mean and median, while inequality in the income distribution is described by the ratio of the 90th percentile to the median (p90/p50), the ratio of the median to the 10th percentile (p50/p10) and the Gini coefficient. The 90th percentile is the income of the individual who has 10% of individuals with higher incomes and 90% with lower incomes. The 10th percentile is the income of the individual who has 90% of individuals with higher incomes and 10% with lower incomes. The Gini coefficient is an overall measure of inequality that ranges from 0, where everyone has the same income, to 1, where one individual has all the income. See the Technical Appendix for further explanation of these measures.

value is to 1, the lower is income mobility; conversely, the closer it is to 0, the greater is income mobility. For example, if no-one's income changed from year to year, the Gini coefficient for 1-year income would be equal to the Gini coefficient for 5-year income, and Shorrocks' R would be equal to 1—and there would indeed be no income mobility, since no-one moves up or down the income distribution from one year to the next. At the other extreme, if everyone had different incomes in any given year (such that, for example, the average Gini coefficient for 1-year income was 0.3), but all had the same total income over 5 years (implying the Gini coefficient for 5-year income would be 0), Shorrocks' R would equal 0—a situation of perfect income mobility.

The estimates of Shorrocks' R presented in Table 3.3 indicate that inequality of 5-year income is approximately 90% of inequality of 1-year income. Thus, some degree of income mobility is evident over 5 years, but it is relatively limited. It follows that there are many persistently high-income persons and many persistently low-income persons. Study of the characteristics of those with low income over the 5-year period would in particular reveal important information about the identities of the entrenched poor.

Figure 3.1: Median equivalised income by family type

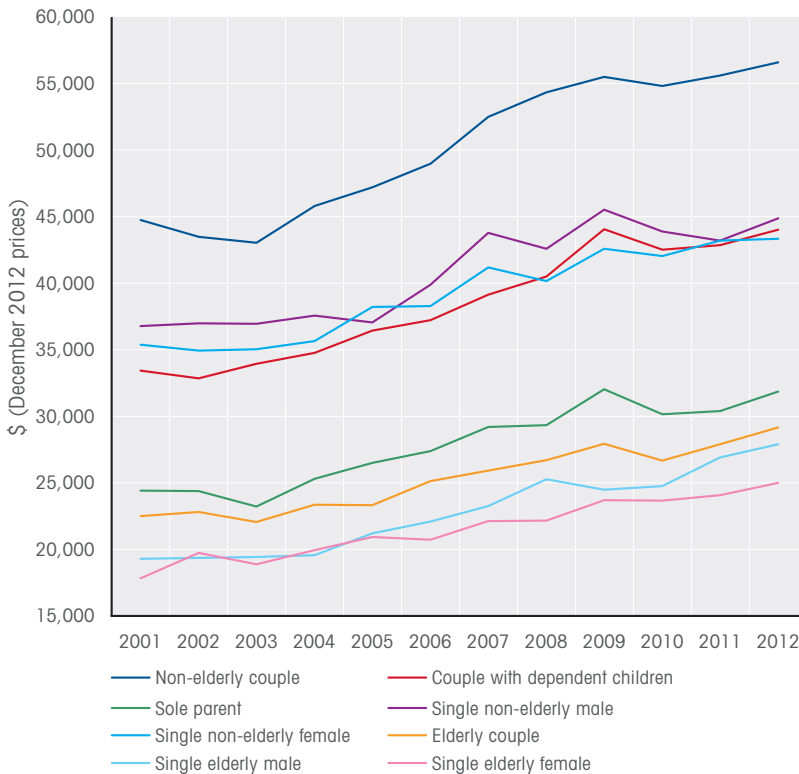


Table 3.3: Distribution of long-term (5-year) equivalised income (December 2012 prices)

	Mean (\$)	Median (\$)	p90/p50	p50/p10	Gini	Shorrocks' R
2001–2005	193,808	174,715	1.78	1.93	0.273	0.897
2002–2006	196,892	177,246	1.79	1.92	0.273	0.899
2003–2007	204,485	182,165	1.81	1.88	0.276	0.903
2004–2008	214,197	191,927	1.82	1.92	0.279	0.907
2005–2009	222,318	198,733	1.83	1.92	0.280	0.913
2006–2010	228,698	202,990	1.83	1.93	0.279	0.906
2007–2011	234,742	209,709	1.83	1.99	0.279	0.902
2008–2012	240,099	215,554	1.80	1.98	0.276	0.901

Income poverty

A wide variety of definitions or measures of poverty, or material deprivation, have been employed by economic and social researchers. While recognising this diversity of potential measures, in this chapter we focus on the most commonly employed definition applied to the study of poverty in developed countries, which conceives of poverty as *relative* deprivation or socio-economic disadvantage, and which measures deprivation in terms of inadequacy of *income*. Consistent with the approach of the Organisation for Economic Co-operation and Development (OECD) and other international bodies, we define relative income poverty as having a household income below 50% of median income. While based on a degree of public and researcher consensus, it should nonetheless be acknowledged that there is an element of arbitrariness to this—or any other—definition of relative poverty.

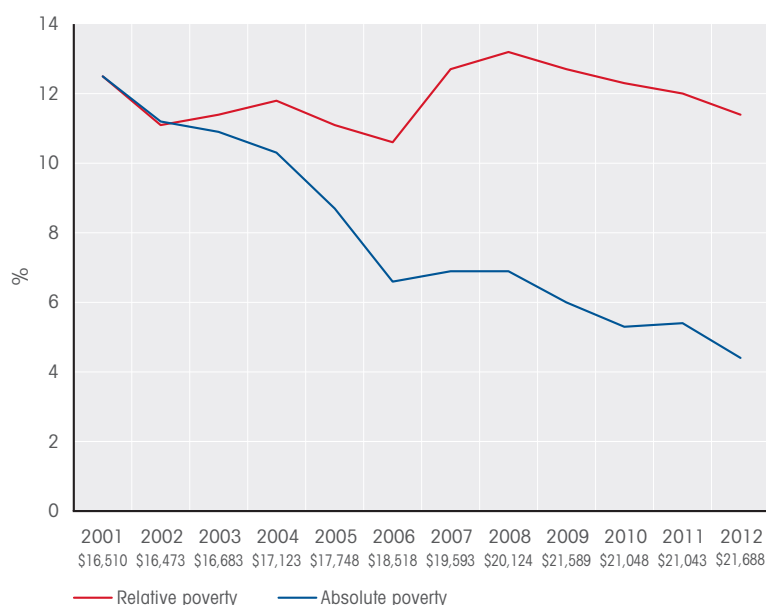
Cross-sectional poverty rates

Figure 3.2 presents relative and absolute poverty rates in each year covered by the HILDA Survey. The absolute poverty line is the 2001 relative poverty line, adjusted for inflation to maintain its purchasing power over the 2001 to 2012 period (see Box 3.5, at right). Our income measure is equivalised income; thus, the poverty lines presented at the bottom of Figure 3.2 can be interpreted as the annual income

Box 3.4: Family types

The following eight family types are distinguished in this chapter: (1) non-elderly couples, defined to be couples (married or de facto) without dependent children with at least one member of the couple under 60 years of age; (2) couples with at least one dependent child living with them; (3) lone parents living with at least one dependent child; (4) non-elderly single males (under 60 years of age); (5) non-elderly single females; (6) elderly couples, where both persons are over 60 years of age; (7) elderly single males (aged 60 and over); and (8) elderly single females. Note that some households will contain multiple 'families'. For example, a household containing a non-elderly couple living with a non-dependent son will contain a non-elderly couple family and a non-elderly single male. Both of these families will, of course, have the same equivalised income.

Figure 3.2: Percentage of the population in income poverty, 2001 to 2012



Note: Dollar values at the base of the figure are the relative poverty lines in each of the financial years, expressed at December 2012 prices.

Box 3.5: Relative and absolute income poverty

A person is in **relative income poverty** if they are unable to afford the goods and services needed to enjoy a normal or mainstream lifestyle in the country in which they live. In this report, we define a person to be in relative income poverty if household equivalised income is less than 50% of the median household equivalised income.

An **absolute (or anchored) poverty line** is an income poverty threshold which has its real value held constant over time rather than adjusted for changes in average living standards. It is 'absolute' in the sense that the *purchasing power* of the poverty line—the basket of goods and services that it can purchase—remains fixed over time. The level at which an absolute poverty line is set may nonetheless be based on the level of a relative poverty line obtained at a particular point in time, for example the beginning of the time period under study.

after taxes and government benefits that a single-person household would require to avoid relative poverty. Poverty rates refer to the proportion of people (not households) living in poverty.

Reflecting the high rate of household income growth that has occurred over much of the 2001 to 2012 period, the relative poverty line has increased substantially, from \$16,510 to \$21,688 expressed at December 2012 prices. The

proportion of the population below this poverty line has fluctuated over time, rising substantially between 2006 and 2008, since when it has steadily declined from 13.2% to 11.4% in 2012. A key reason for this fluctuation is that many welfare recipients in Australia have incomes quite close to 50% of median income, so that relatively small movements in government benefits or the median can bring about sizeable changes in the poverty rate.

While the limited progress in reducing relative income poverty between 2001 and 2012 may be regarded as undesirable, concern may be tempered by the poverty estimates obtained when the real value of the poverty line is maintained at its 2001 level of \$16,510 (at December 2012 prices). For this absolute poverty line, the proportion of the population below the poverty line drops from 12.5% in 2001 to 4.4%

Table 3.4: Poverty rates by family type (%)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Non-elderly couple	10.5	8.4	7.6	7.9	7.0	6.9	8.6	8.3	8.8	7.4	7.3	7.6
Couple with children	7.1	6.4	7.2	8.0	6.3	5.3	7.6	7.3	5.8	6.4	6.2	5.4
Lone parent	18.5	17.1	18.1	18.7	17.1	20.3	23.0	22.8	19.8	24.3	21.9	18.5
Non-elderly single male	12.3	12.3	12.6	12.4	12.4	9.6	11.7	13.6	12.7	12.3	13.1	14.2
Non-elderly single female	14.9	13.7	15.3	14.5	13.9	12.5	15.4	15.8	15.5	13.7	14.2	11.7
Elderly couple	20.7	18.1	14.6	18.5	23.2	24.7	25.4	29.4	31.9	29.6	28.0	25.6
Elderly single male	39.3	38.5	39.9	39.1	34.6	32.2	34.8	37.2	42.2	39.5	33.8	33.8
Elderly single female	44.8	37.9	41.0	37.2	37.6	37.9	39.3	42.5	43.6	39.2	39.1	38.7

Table 3.5: Rates of child poverty—Children under 18 years of age (%)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Live with both parents	7.3	6.1	7.3	8.3	6.2	5.3	8.2	7.9	6.3	7.1	6.5	5.2
Live with 1 parent	19.8	17.7	18.3	19.5	17.8	22.1	24.3	24.3	21.5	25.4	23.1	19.8
All children	10.1	9.0	10.0	11.1	9.3	8.8	11.6	11.9	9.6	10.6	9.7	8.1
All persons	12.4	11.0	11.3	11.9	11.0	10.5	12.6	13.0	12.4	12.1	11.9	11.2



Table 3.6: Long-term income poverty (%)

	2001–2005	2002–2006	2003–2007	2004–2008	2005–2009	2006–2010	2007–2011	2008–2012
All persons	8.6	8.3	7.6	8.7	9.0	8.7	9.9	9.7
Predominant family type								
Non-elderly couple	5.4	5.2	5.0	5.7	5.9	5.5	6.5	7.0
Couple with children	4.0	4.3	3.0	4.3	4.4	4.0	4.6	4.6
Lone parent	12.6	11.2	11.0	12.8	13.1	10.7	13.1	15.4
Single non-elderly male	7.7	6.7	6.3	7.3	7.0	7.4	10.0	8.7
Single non-elderly female	11.6	10.4	9.3	9.4	9.6	10.3	11.0	9.7
Elderly couple	20.9	19.9	21.7	23.2	24.6	25.9	29.1	27.4
Single elderly male	34.3	32.1	29.2	32.9	35.2	36.7	39.0	35.7
Single elderly female	39.5	39.1	37.4	36.1	40.3	39.0	39.0	37.3
Children								
1 parent every wave	16.4	11.3	10.6	13.2	13.1	11.4	17.0	19.8
1 parent majority of waves	11.1	8.7	9.7	12.9	11.5	6.8	9.4	21.1
2 parents majority of waves	5.4	4.9	4.3	6.1	5.5	7.5	7.8	9.7
2 parents all waves	4.0	4.5	2.8	3.8	3.6	3.7	5.2	4.9
All children	6.2	5.7	4.4	5.7	5.4	5.0	7.0	8.0

Note: Children are aged 0–13 in the initial year of each 5-year period (and are therefore aged 4–17 in the final year of each 5-year period).

in 2012. It is therefore clear that, even among the poor, average living standards have increased over the full 12-year period.

Poverty by family type

Table 3.4 shows that poverty rates vary substantially by family type. Rates are consistently high among the elderly, particularly elderly single people. Note, however, that elderly people are more likely to own their own house than are younger people, and our income poverty measure does not account for in-kind income provided by owner-occupied housing—that is, the rent that home owners would have to pay for their housing if they did not own it. The income poverty rates for the elderly are therefore likely to overstate the extent of their relative deprivation. Moreover, we can see that the poverty rates for elderly single males and females decreased substantially between 2009 and 2011, from 42.2% to 33.8% for males, and from 43.6% to 39.1% for females. This is likely to be attributable to the increase in the payment rate for single Age Pensioners from September 2009.

Poverty rates are also high for lone-parent families, typically lying

between 18% and 20%. In 2012, 18.5% of people living in lone-parent families were in poverty. By contrast, non-elderly couples (married or de facto), whether with or without dependent children, have consistently low poverty rates.

Child poverty

Child poverty is a particular concern for policy-makers because of the damage poverty may do to children's future productive capacity and life prospects more generally. The bottom two rows of Table 3.5 show that the child poverty rate is consistently below the community-wide poverty rate. However, as the second row of the table shows, there is still much room for improvement among lone-parent families. That said, after peaking at 25.4% in 2010, the poverty rate for children in lone-parent families fell in each of the next two years, to be 19.8% in 2012.

Long-term income poverty

In the same way that the distribution of 'permanent' income can be examined, it is possible to use the longitudinal structure of the HILDA Survey data to examine 'permanent' income poverty. Table 3.6 shows the proportion of people in relative

income poverty for a 5-year measure of income, where 5-year income is measured in the same way as earlier in this chapter, and where the poverty line is equal to 50% of median 5-year equivalised income. Consistent with some people in income poverty in a given year being only temporarily poor, the overall income poverty rate is lower for 5-year income than for 1-year income. The 5-year income poverty rate ranges from 7.6% (2003–2007) to 9.9% (2007–2011), compared with a range for 1-year poverty (shown in Figure 3.2) of 10.5% to 13.0%. Somewhat concerning, however, is that the highest 5-year poverty rates have occurred in the most recent periods, with the 5-year poverty rate 9.9% in the second-last period (2007–2011) and 9.7% in the last period (2008–2012). This is almost certainly connected to the less favourable macroeconomic conditions prevailing since the Global Financial Crisis (GFC) in 2008.

The second panel of Table 3.6 shows the 5-year poverty rates broken down by family type, where individuals are assigned to their most common (predominant) family type over the 5-year period. Long-term poverty is clearly more

prevalent among the elderly than among people in other family types. It is nonetheless also relatively high among lone-parent families, particularly in the most recent 5-year period (2008–2012), when 15.4% of people in lone-parent families had 5-year income below the poverty line. As with 1-year poverty (Table 3.4), non-elderly couples, with or without children, have relatively low rates of 5-year income poverty.

The bottom panel of Table 3.6 focuses on child poverty. It examines, for each 5-year period, children aged under 18 for the entire period (and therefore aged under 14 in the first year and aged 4–17 in the final year). Prevalence of permanent income poverty is lower among children than among the general population. There has, however, been a sharp rise in child permanent income poverty between the 2006 to 2010 and 2008 to 2012 periods, rising from 5.0% to 8.0%. It is also clear that long-term child poverty is strongly connected to the presence of only one parent in the household. Children living with only one parent in all or the majority of the 5-year period have the highest long-term income poverty rates, while children living with both parents in all 5 years have the lowest long-term income poverty rates.

Welfare reliance

Dependence on welfare remains a significant concern for policy-makers in Australia because it is associated with significant demands on government budgets and reduced economy-wide market output. Moreover, individuals' reliance on welfare is often associated with long-term poverty, social exclusion and other adverse outcomes for them and their children. The HILDA Survey is an important data source for understanding welfare reliance, since the longitudinal nature of the data enables the study of the duration and dynamics of welfare

receipt. Specifically, it is possible to identify entrenched welfare reliance and the factors associated with it. In this section, we present a brief overview of the extent of welfare reliance in Australia, examining both 1-year and 5-year time-frames.

Welfare reliance over a 1-year time-frame

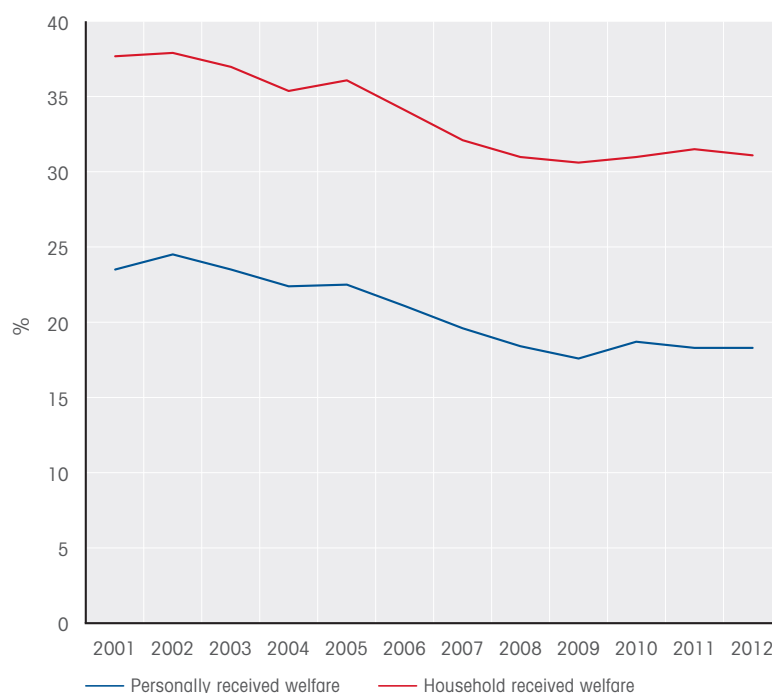
Figures 3.3 and 3.4 respectively present cross-sectional estimates of welfare receipt and welfare reliance

for 'workforce age' persons, defined here as people aged 18–64. In 2012, 31.1% of individuals aged 18–64 were living in a household that received income support at some stage of the 2011–12 financial year. Significantly, there was a substantial decline in the rate of receipt of income support payments between 2001 and 2009. For example, the proportion of working-age people in households that received income support payments declined from

Box 3.6: Welfare payments

Welfare payments in Australia are known as income support payments, which are benefits paid to Australian residents that are intended to represent the primary source of income of recipients. Studies of welfare reliance in Australia correspondingly focus on receipt of income support payments, although supplementary government benefits, known as non-income support payments, are typically included by studies when determining the extent of welfare reliance of those who have received income support payments. Income support payments include the Age Pension, Disability Support Pension, Carer Payment, Parenting Payment (Single and Partnered), Newstart Allowance, Youth Allowance and Department of Veterans' Affairs Service Pension, as well as several other smaller payment types. Non-income support payments include Family Tax Benefit (Parts A and B), the Baby Bonus and Carer Allowance.

Figure 3.3: Receipt of welfare by persons aged 18–64



Box 3.7: Definitions of welfare reliance

While a person may be regarded as to some extent reliant on welfare if any welfare payments are received by that person's household, welfare reliance is usually conceived as a situation in which welfare represents the primary or main source of income. In this report, two alternative specific definitions of welfare reliance are adopted:

1. The household receives income support payments and more than 50% of household income comes from income support and non-income support payments.
2. The household receives income support payments and more than 90% of household income comes from income support and non-income support payments.

37.7% in 2001 to 30.6% in 2009. Since 2009, welfare receipt has increased only slightly.

As would be expected, the proportion of the population classified as welfare reliant depends on whether the 50% or 90% threshold is employed, with reliance lower adopting the 90% threshold. However, the two measures show similar trends, both declining between 2002 and 2008, and both remaining relatively constant thereafter, at approximately 10% for the 50% threshold, and at approximately 5% for the 90% threshold.

Figure 3.5 shows that welfare reliance among working-age people is very much associated with living in lone-parent families. For each year from 2001 to 2012, the figure presents the proportion of individuals in each family type obtaining more than 50% of household income from welfare benefits. Lone parents have considerably higher rates of welfare dependence than people in other family types, although there was some decline in lone-parent welfare reliance between 2002 and 2008, falling from a peak of 44.9% in 2002 to a low of 32.5% in 2008.

Couples, with or without dependent children, have the lowest rates of welfare dependence, and have also experienced a decline in welfare dependence, falling from 8.6% in 2002 to 5.6% in 2012 for couples with dependent children, and falling from 10.9% in 2002 to 6.2% in 2012 for other couples. Single men and women have welfare dependence rates slightly higher than couples, and have experienced no trend decline in welfare reliance. The gap between couples and single people has therefore risen over the HILDA Survey period.

Welfare receipt over a 5-year time-frame

Table 3.7 presents 5-year rates of welfare receipt and welfare reliance (50% threshold) among people

Figure 3.4: Reliance on welfare among persons aged 18–64

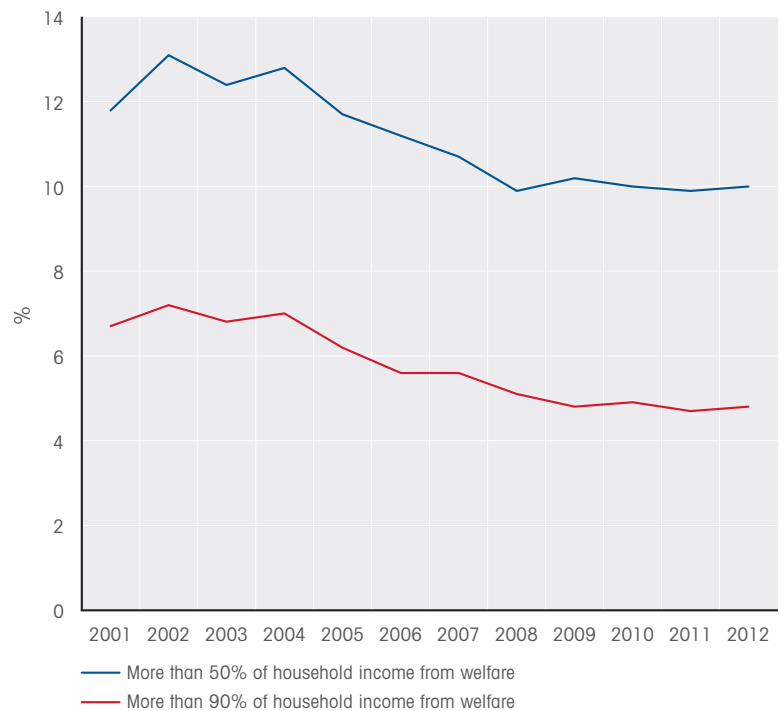
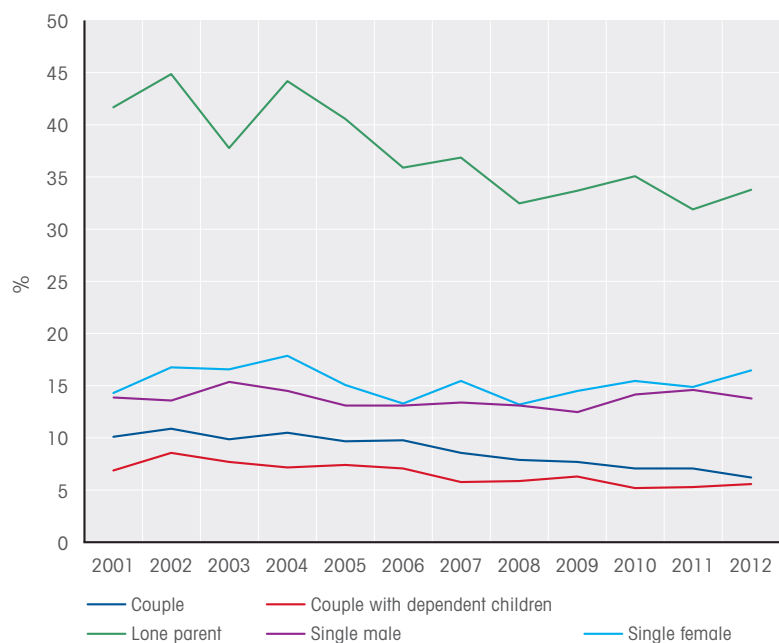


Figure 3.5: Welfare reliance of persons aged 18–64, by family type



Note: A person is defined to be welfare reliant if more than 50% of household annual income comes from welfare.



Table 3.7: Welfare reliance over a 5-year period, by initial age group and by predominant family type—Persons aged 18–60 at the start of the 5-year period (%)

	2001–2005	2003–2007	2005–2009	2007–2011	2008–2012
Household received welfare at some stage of the 5-year period					
All aged 18–60 at start of period	55.1	52.5	51.7	50.5	49.9
<i>Initial age group</i>					
18–24	69.4	65.6	65.4	64.7	62.4
25–34	50.0	46.4	43.9	42.0	42.6
35–44	51.5	47.9	47.7	45.7	44.1
45–54	54.3	53.5	51.3	51.0	50.8
55–60	58.9	57.3	59.1	57.5	57.1
<i>Predominant family type</i>					
Couple	46.6	42.6	44.5	41.8	42.0
Couple with dependent children	50.7	46.8	45.5	43.2	42.3
Lone parent	88.0	88.3	83.5	84.6	81.9
Single male	64.3	62.0	61.9	61.7	62.2
Single female	64.6	65.9	63.8	64.8	62.7
More than 50% of 5-year household income from welfare					
All aged 18–60 at start of period	7.9	7.3	7.9	8.3	8.1
<i>Initial age group</i>					
18–24	5.4	4.0	4.3	5.2	5.2
25–34	5.2	5.3	6.6	5.8	6.4
35–44	7.3	6.4	6.9	7.8	6.8
45–54	9.2	8.5	8.3	8.3	8.2
55–60	16.3	15.2	16.1	17.5	17.4
<i>Predominant family type</i>					
Couple	6.4	6.5	6.7	6.3	6.6
Couple with dependent children	3.8	3.5	4.8	4.2	4.0
Lone parent	31.3	25.9	32.0	29.4	28.0
Single male	9.3	8.9	8.4	11.1	11.2
Single female	12.5	11.0	10.5	12.8	12.2

Table 3.8: Persons commencing welfare receipt: Personal welfare reliance over the 5-year period from commencement, total and by initial payment type—Persons aged 18–60 at the start of the 5-year period

Personal receipt of income support (IS)

	Mean number of years on IS		Proportion on IS in all 5 years (%)	
	Spells commenced 2001–02 to 2004–05	Spells commenced 2005–06 to 2007–08	Spells commenced 2001–02 to 2004–05	Spells commenced 2005–06 to 2007–08
Total	2.84	2.65	22.7	18.9
<i>Initial main payment type</i>				
Unemployment benefits	2.72	2.82	20.9	22.7
Parenting Payments	2.56	2.39	18.6	15.5
Disability Support Pension	4.31	4.21	68.5	60.1
Other income support	2.92	2.57	20.6	15.0

Personal income from welfare

	Mean proportion of personal income from welfare (%)		Proportion on average personally reliant on welfare over the 5 years ^a (%)	
	Spells commenced 2001–02 to 2004–05	Spells commenced 2005–06 to 2007–08	Spells commenced 2001–02 to 2004–05	Spells commenced 2005–06 to 2007–08
Total	34.0	30.9	29.4	25.3
<i>Initial main payment type</i>				
Unemployment benefits	26.7	29.0	23.6	22.7
Parenting Payments	32.2	29.0	25.7	23.8
Disability Support Pension	67.3	61.7	71.0	70.4
Other income support	36.0	30.3	30.5	23.4

Note: ^a To determine if an individual is 'on average personally reliant over the 5 years', the proportion of income from welfare is calculated for each year in the 5-year period and the average value of this proportion across the 5 years is obtained. If this average value is 50% or higher, the individual is deemed to be 'on average personally reliant over the 5 years'.

aged 18–64 for the entire 5-year period, in total and disaggregated by (initial) age group and by predominant family type. A strikingly high proportion of working-age people come into contact with the welfare system over a 5-year period, although it is also significant that this proportion has steadily declined over the HILDA Survey period. In the 2001 to 2005 period, 55.1% of individuals aged 18–60 in 2001 were at some stage in a household that received income support, while the corresponding figure for the 2008 to 2012 period was 49.9%.

Rates of receipt over a 5-year window are high for all age groups in all periods examined in the table, the lowest rate being 42.0% over the 2007 to 2011 period for those aged 25–34 in 2007. Nonetheless, substantial differences across the age groups are evident. Rates of receipt are highest for the 18–24 age group, but drop sharply for the 25–34 age group, which has the lowest rates of receipt of all the

age groups. Rates of 5-year receipt are then increasing in age group, with those in the 55–60 age group having only slightly lower rates of receipt than those in the 18–24 age group.

Declines in rates of 5-year welfare receipt between the 2001 to 2005 and 2008 to 2012 periods have been similar among the three youngest age groups shown in Table 3.7, falling approximately 7 percentage points. The two oldest age groups experienced less decline in rates of 5-year receipt, at 3.5 percentage points among those aged 45–54 and only 1.8 percentage points for those aged 55–60.

Couples without dependent children have the lowest rates of income support receipt over a 5-year window, closely followed by couples with dependent children. Both single men and single women have high rates of income support receipt, with more than 60% receiving income support in all



5-year periods examined in Table 3.7. Single parents have the highest rates of receipt, with more than 80% receiving income support over any given 5-year period. Couples with dependent children have experienced the biggest decline in 5-year welfare receipt, followed by lone parents and then couples without dependent children. Single men and women have experienced only slight declines in rates of welfare receipt.

While contact with the welfare system is high, relatively few working-age people are reliant on welfare for more than half their income over a 5-year period. Overall rates of 5-year reliance range from 7.3% in the 2003 to 2007 period to 8.3% in the 2007 to 2011 period. However, in an important contrast to the findings for rates of receipt, no trend decline in 5-year welfare reliance is evident over the 2001 to 2012 period. Indeed, reliance was highest in the 2007 to 2011 and 2008 to 2012 periods. Disaggregation by age group and by

family type indicates this has largely arisen from increases in reliance for the 25–34 and 55–60 age groups (with the increase for the 25–34 age group actually occurring in the 2005 to 2009 period, but sustained thereafter), and for single men.

In Table 3.8, we focus on personal rather than household income support receipt and restrict the analysis to people who commenced a spell on income support, examining how subsequent 5-year receipt and reliance on income support differs by initial benefit payment type. For example, for people who commenced a spell on income support in 2007–08, welfare receipt and reliance is examined in 2007–08, 2008–09, 2009–10, 2010–11 and 2011–12. For the purposes of the table, a spell on income support is deemed to commence if the individual received income support in the current financial year and did not receive income support in the previous financial year. The initial payment type is the *main* payment type in the first year of the spell, defined as the

benefit from which the individual derived the most income in that year.

The table shows that, among individuals aged 18–60 who commenced an income support spell in the 2001–02 to 2004–05 period, income support was received, on average, in 2.84 of the 5 years from commencement of the spell; the corresponding figure for spells commenced in the 2005–06 to 2007–08 period is 2.65 years. The proportion who were on income support in all 5 years was 22.7% for spells commenced 2001–02 to 2004–05, and 18.9% for spells commenced 2005–06 to 2007–08. Consistent with these trends in receipt among those who commenced an income support spell, the mean proportion of personal income from welfare declined from 34.0% for spells commenced 2001–02 to 2004–05 to 30.9% for spells commenced 2005–06 to 2007–08. Likewise, the proportion who were on average personally reliant on welfare over the 5-year period (i.e., the proportion of income from welfare each year averaged over 50%) fell from 29.4% to 25.3%.

Differences across initial payment types show that subsequent reliance is highest for those who commence on the Disability Support Pension, which is consistent with the tendency for disabilities to persist over time. Perhaps not so easily anticipated is that people who commence on Parenting Payment on average spend less time on welfare in the 5 years following commencement than people who commence on unemployment benefits. Also significant is that, while 5-year reliance of those who commenced on Parenting Payments, the Disability Support Pension and other income support payments declined over the HILDA Survey period, for those who commenced on unemployment benefits, the time spent on income support and the mean proportion of income from welfare over the subsequent 5 years actually increased.



4

The labour market



A primary focus of the HILDA Survey is the labour market activity of household members. In each wave, detailed information is obtained from respondents to ascertain their labour force status, earnings, hours worked, the type of work undertaken, employer characteristics and a host of other work-related aspects. Perceptions and attitudes on a range of labour market issues, such as satisfaction with the current main job, likelihood of retaining the current job and preferred hours of work, are also collected every year. Periodically, additional information is gathered on retirement intentions, attitudes to work and, more recently, work-related training and experience of job-related discrimination.

Such an emphasis on the labour market reflects the pivotal role employment plays in determining economic and social wellbeing. Not only is it the key determinant of the majority of households' incomes, it is key to participation in society both economically and socially. Understanding individuals' labour market outcomes, and the causes and consequences of those outcomes, is correspondingly core to the purpose of the HILDA Survey.

Labour force status transitions

Standard statistical summaries of the labour force, such as produced by the Australian Bureau of Statistics (ABS) for its monthly publication, *Labour Force, Australia* (ABS, 2013), divide the population aged 15 and over into 'employed', 'unemployed' and 'not in the labour force' (see Box 4.1, page 36). The HILDA Survey collects information from respondents each year enabling classification of all respondents into one of these three categories. This allows us to produce cross-sectional labour statistics of the same kind as produced by the ABS, but more importantly, it facilitates longitudinal analysis of many aspects of labour force status mobility—that is, movements over time across different labour force states.

Table 4.1 presents cross-sectional HILDA Survey estimates of the labour force status of the population aged 15 and over for each year over the 2001 to 2012 period. They

show, consistent with ABS Labour Force Survey data, that the Global Financial Crisis (GFC) marked something of a turning point for the Australian labour market. From 2001 until 2008, employment participation had been rising and unemployment had been falling; in 2009, employment participation fell and unemployment rose, with only a partial recovery occurring in 2010 and 2011, before further deterioration in 2012. What is not clear from Table 4.1 is how this softening of the labour market has translated into the rates at which various transitions in labour force status occur. For example, weaker employment growth could arise from fewer transitions from unemployment to employment, fewer transitions from not in the labour force to employment, increased transitions from employment to unemployment, and/or increased transitions from employment to not in the labour force.

Table 4.2 examines this issue by comparing 1-year transitions in labour force status over the 2003 to 2007 period with transitions over

the 2008 to 2012 period, showing, for each initial labour force state, the proportion in each labour force state one year later. The upper panel of the table pools all 1-year transitions occurring between 2003 and 2007 (i.e., 2003 to 2004, 2004 to 2005, 2005 to 2006 and 2006 to 2007), while the lower panel pools all 1-year transitions occurring between 2008 and 2012 (i.e., 2008 to 2009, 2009 to 2010, 2010 to 2011 and 2011 to 2012).

The table shows that men experienced an increase in the rate of transitions from employment to unemployment (from 1.4% to 1.9%) and a decrease in the rate of transitions from unemployment to employment (from 51.8% to 44.8%). Women also experienced an increase in the rate of transitions from employment to unemployment (from 1.5% to 1.8%) and a decrease in the rate of transitions from unemployment to employment (from 52.8% to 43.9%), but also experienced an increase in the rate of transitions from employment to not in the labour force (from 6.7% to 7.3%) and a reduction in transitions from not in the labour force to employment (from 17.9% to 15.8%). Thus, weakening of the labour market has primarily affected transitions between employment and unemployment for

Box 4.1: Labour force status

In this report, insofar as is possible, we follow international and Australian Bureau of Statistics (ABS) conventions in determining an individual's labour force status. In particular:

1. A person is classified as **employed** if that person had a job, business or farm in the week leading up to the interview, and had either worked in the last four weeks or had not worked but: had been in paid work for any part of the last four weeks; or had been on worker's compensation and expected to return to work for the same employer; or had not worked because of a strike or lock-out.
2. An employed person is classified as **employed part-time** if usual weekly hours of work in all jobs total less than 35. Otherwise, an employed person is classified as **employed full-time**. (The definition of part-time employment adopted in this report differs from the definition the ABS uses in its Labour Force Survey. The ABS definition requires both usual and current actual weekly hours to be less than 35.)
3. A non-employed person is classified as **unemployed** if that person had actively looked for work at any time in the four weeks preceding the interview and was available to start work in the week preceding the interview; or if that person was waiting to start a new job within four weeks from the date of interview and could have started in the week preceding the interview if the job had been available.
4. A non-employed person who is not unemployed is classified as **not in the labour force (NILF)**. Among people not in the labour force, several distinctions are often made based on the degree of 'attachment' to the labour market. This includes identifying the **marginally attached**—people who want to work and are either available to start work but are not currently looking, or are looking for work but are not currently available.

Several key statistics are commonly produced based on these definitions of labour force status, including the **participation rate** (the proportion of the population in the labour force) and the **unemployment rate** (the proportion of those in the labour force who are unemployed).

men, but for women has affected both transitions between employment and unemployment and transitions between employment and non-participation (not in the labour force).

Labour force transitions of youth and young adults

The early years in the labour market following completion of full-time study are generally thought to be

critical to longer-term labour market outcomes. Extended periods of unemployment in these formative years can potentially have long-term 'scarring' effects that further undermine future prospects for employment and wage growth. The age at which entry to the labour market occurs in a 'substantive' fashion (i.e., ignoring part-time and holiday employment while a student) of course depends on the amount of education an individual undertakes, but will typically occur in the 15–29 age range. In Table 4.3, we

Table 4.1: Labour force status of the population aged 15 and over (%)

	Males				Females			
	Employed	Unemployed	Not in the labour force	Total	Employed	Unemployed	Not in the labour force	Total
2001	68.0	5.3	26.8	100.0	53.2	3.5	43.3	100.0
2002	68.8	4.5	26.8	100.0	53.5	3.4	43.2	100.0
2003	68.7	4.1	27.2	100.0	54.1	3.0	42.9	100.0
2004	69.6	3.4	27.0	100.0	54.7	3.2	42.2	100.0
2005	69.6	3.5	27.0	100.0	56.2	2.9	40.9	100.0
2006	70.2	3.1	26.7	100.0	56.9	2.7	40.4	100.0
2007	70.2	2.9	26.9	100.0	58.2	2.6	39.2	100.0
2008	70.5	2.9	26.6	100.0	58.8	2.8	38.5	100.0
2009	69.4	4.2	26.4	100.0	57.8	2.9	39.3	100.0
2010	70.1	3.6	26.3	100.0	58.1	3.0	39.0	100.0
2011	70.3	3.4	26.3	100.0	57.0	3.3	39.6	100.0
2012	69.7	4.0	26.3	100.0	57.0	3.0	40.0	100.0

Table 4.2: One-year labour force status transitions before and after the GFC—Persons aged 18–64 (%)

	Proportion in labour force state in year t	Labour force status in year t + 1			Total
		Employed	Unemployed	NILF	
Males					
<i>2003–2006</i>					
Employed in year t	82.7	95.5	1.4	3.1	100.0
Unemployed in year t	3.4	51.8	27.8	20.5	100.0
NILF in year t	13.9	17.8	6.9	75.4	100.0
<i>2008–2011</i>					
Employed in year t	83.6	95.0	1.9	3.1	100.0
Unemployed in year t	3.6	44.8	33.1	22.2	100.0
NILF in year t	12.8	17.7	7.7	74.6	100.0
Females					
<i>2003–2006</i>					
Employed in year t	67.3	91.8	1.5	6.7	100.0
Unemployed in year t	3.1	52.8	17.3	29.9	100.0
NILF in year t	29.7	17.9	4.3	77.9	100.0
<i>2008–2011</i>					
Employed in year t	70.6	90.9	1.8	7.3	100.0
Unemployed in year t	3.3	43.9	28.1	28.0	100.0
NILF in year t	26.1	15.8	4.1	80.2	100.0

Note: NILF—Not in the labour force.

therefore examine labour force status outcomes of individuals in this age range.

The table presents participation and unemployment rates (defined in Box 4.1, page 36), as well as rates of transition from unemployment to employment from one year to the next, comparing across three age groups and across three time periods: 2001 to 2003, 2004 to 2007, and 2008 to 2011.

For males, both the participation rate and unemployment rate are strongly ordered by age group. Just over 60% of males aged 15–19 are in the labour force, compared with nearly 90% of males aged 20–24 and over 90% of males aged 25–29. In all three periods examined in the table, the unemployment rate is over 16% for males aged 15–19, at least 6.6% for males aged 20–24 and 5% or lower for males aged 25–29. For females, those aged 20–24 have the highest participation rates; the lower rate for those aged 25–29 most likely reflects withdrawal from the labour force to have children.



Unemployment rates of females are, however, similar (although certainly not identical) to male unemployment rates in the corresponding age groups. Transitions from unemployment to employment are not clearly ordered by age, with only about half of unemployed males and females in the 15–29 age range being employed one year later.

Reflecting macroeconomic conditions, participation, unemployment and transitions from unemployment to employment improved in almost all cases between the 2001 to 2003 period and the 2004 to 2007 period, but then deteriorated between the

2004 to 2007 period and the 2008 to 2011 period.

Unemployment duration

While unemployment is never a good experience, of most concern to policy-makers and others are extended periods of unemployment, which often cause substantial economic hardship and potentially result in a host of other adverse outcomes such as deterioration in skills, health and sense of self-worth. Being a longitudinal study, the HILDA Survey is well suited to

studying the duration of unemployment, including who is most vulnerable to long-term unemployment, the factors that impact on unemployment duration, and the consequences of extended periods of unemployment. In this section, a brief analysis of unemployment duration and the factors affecting unemployment duration is presented, but considerably more detailed analysis could, and should, be undertaken.

Table 4.4 draws on the information collected on labour force status at the time of interview to examine unemployment durations. The upper panel examines, for those observed to commence an unemployment spell (defined as unemployed at the time of interview in the current wave and not unemployed at the time of interview in the previous wave), the number of consecutive waves individuals are unemployed at the time of interview. The lower panel examines the number of consecutive waves individuals were *not employed* at the time of interview for individuals who were

Table 4.3: Labour force status and transitions from unemployment—Persons aged 15–29 (%)

	2001–2003	2004–2007	2008–2011
Aged 15–19			
<i>Males</i>			
Participation rate	63.4	63.5	60.1
Unemployment rate	17.8	16.8	16.2
Unemployed in year t: Percentage employed in year t + 1	47.7	55.1	44.7
<i>Females</i>			
Participation rate	64.9	65.1	62.8
Unemployment rate	16.4	13.6	13.8
Unemployed in year t: Percentage employed in year t + 1	50.2	60.5	46.4
Aged 20–24			
<i>Males</i>			
Participation rate	89.2	88.3	87.5
Unemployment rate	11.4	6.6	7.8
Unemployed in year t: Percentage employed in year t + 1	55.6	63.2	41.6
<i>Females</i>			
Participation rate	80.0	82.6	79.2
Unemployment rate	7.8	6.2	7.5
Unemployed in year t: Percentage employed in year t + 1	50.6	69.0	50.7
Aged 25–29			
<i>Males</i>			
Participation rate	92.3	93.7	92.9
Unemployment rate	5.0	4.1	5.0
Unemployed in year t: Percentage employed in year t + 1	57.5	48.4	45.7
<i>Females</i>			
Participation rate	74.1	76.2	77.9
Unemployment rate	5.5	4.6	5.4
Unemployed in year t: Percentage employed in year t + 1	46.5	42.8	47.3



Table 4.4: Duration of spells commencing in unemployment—Persons aged 16–59 at the time of spell commencement

	Males		Females	
	Spells commencing 2002–2005	Spells commencing 2006–2009	Spells commencing 2002–2005	Spells commencing 2006–2009
Number of consecutive waves observed to be unemployed at time of interview				
1	64.5	70.1	68.4	68.4
2	20.9	16.0	19.0	17.8
3	9.3	7.2	6.9	5.5
4 or more	5.3	6.7	5.7	8.3
Total	100.0	100.0	100.0	100.0
Number of consecutive waves observed to be not employed at time of interview				
1	49.6	52.7	41.2	38.5
2	19.2	15.3	17.2	13.9
3	10.0	8.4	9.0	7.8
4 or more	21.2	23.6	32.6	39.8
Total	100.0	100.0	100.0	100.0

initially observed to be unemployed, which captures people who have given up trying to find employment.

Considering first the upper panel, the table shows that the majority of people observed to commence an unemployment spell in one wave are not unemployed in the next wave, with between 64.5% and 70.1% of people commencing an unemployment spell in this category. That said, of those who are observed to enter unemployment, a significant proportion—around 30%—are observed in the state in two or more consecutive waves. Notwithstanding the potential for people to temporarily exit unemployment between waves, this translates to a large number of people experiencing unemployment for one or more years. Even more striking, the lower panel shows that about half of males and 60% of females who commence an unemployment spell are observed to be not employed for two or more consecutive waves.

Females who commence an unemployment spell appear to be slightly less vulnerable than males to long-term unemployment in the 2002 to 2005 spell-commencement period, but slightly more vulnerable to long-term unemployment in the 2006 to 2009 spell-commencement

Box 4.2: The HILDA Survey employment and education calendar

In each wave, respondents are asked to recall their employment and education activity in each third of each month from the beginning of the last financial year to the time of interview. It is potentially difficult for respondents to recall such detail—particularly if one or more jobs were commenced and/or ended in the period—and so some degree of caution is warranted in interpreting the data. Moreover, the unemployment definition does not exactly equate to the definition used for ascertaining labour force status at the time of interview: an individual is classified as unemployed in a given period if they report being ‘not employed and looking for work’. Nonetheless, the calendar is useful for providing an indication of the extent to which the annual interview misses unemployment spells, job spells and periods out of the labour force.

period. However, in both periods, females were considerably more vulnerable than males to long-term non-employment. For example, among those observed to commence an unemployment spell in the 2006 to 2009 period, 39.8% of females were not employed at the time of interview in four or more consecutive waves, compared with 23.6% of males. Comparing spells commencing in the 2002 to 2005 period with spells commencing in the 2006 to 2009 period, an increase in spells of four or more waves is evident for both unemployment and non-employment, largely arising from declines in spells of two or three waves. The increases in spells of four or more waves are greater for females than males, rising from 5.7% to 8.3% of unemployment spells and from 32.6% to 39.8% of non-employment spells, compared with increases for males from 5.3% to 6.7% for unemployment and from 21.2% to 23.6% for non-employment.

The analysis presented in Table 4.4 provides coarse measures of unemployment duration, not distinguishing durations at a finer level than the number of years. Moreover, it is not technically an analysis of unemployment durations, since an individual unemployed at the time of interview in two consecutive waves may have been employed or not in the labour force at some stage between interviews. The HILDA Survey data do, however, permit more detailed analysis of unemployment duration, drawing on the ‘employment and education calendar’ collected each wave (see Box 4.2, above). Table 4.5 presents information on unemployment durations based on this calendar.

The table provides a sense of the distribution of spell durations among spells lasting less than one year, showing that most are between 1 month and 6 months. It also presents somewhat

Table 4.5: Duration of unemployment spells based on the employment calendar—Persons aged 16–59 at the time of spell commencement

	Males			Females		
	Spells commencing 2001–2004	Spells commencing 2005–2008	Spells commencing 2009–2010	Spells commencing 2001–2004	Spells commencing 2005–2008	Spells commencing 2009–2010
< 1 month	7.9	8.3	10.4	6.1	7.3	7.8
1 month to < 3 months	35.5	40.4	37.0	33.8	40.1	36.5
3 months to < 6 months	26.6	20.7	20.5	26.4	23.8	23.3
6 months to < 1 year	17.6	17.2	16.2	18.6	15.4	18.3
1 year to < 2 years	7.9	10.1	10.6	12.4	11.3	11.7
2 years to < 3 years	2.9	2.1	3.1	1.5	1.0	2.1
3 years to < 4 years	1.2	0.5	} 2.1	0.8	0.4	} 0.4
4 or more years	0.2	0.6		0.3	0.6	
Total	100.0	100.0	100.0	100.0	100.0	100.0

contrasting information from Table 4.4 in terms of the proportion of spells lasting one year or more. For example, in Table 4.5, 12.2% of unemployment spells of males in the 2001 to 2004 period were one year or longer, whereas in Table 4.4, 35.5% of male spells in the 2002 to 2005 period were one year or longer. In part, this may reflect differences in the definition of unemployment. Unemployment at the time of interview is measured in essentially the same way as measured by the ABS for its Labour Force Survey (see Box 4.1, page 36), whereas a simpler approximation, ‘not employed and looking for work’, is used for the employment calendar. However, the more important source of difference is likely to be that many people unemployed at the time of interview in two consecutive waves were not unemployed for the entire interval between interviews because they temporarily obtained employment or temporarily withdrew from the labour force.

What factors influence unemployment duration?

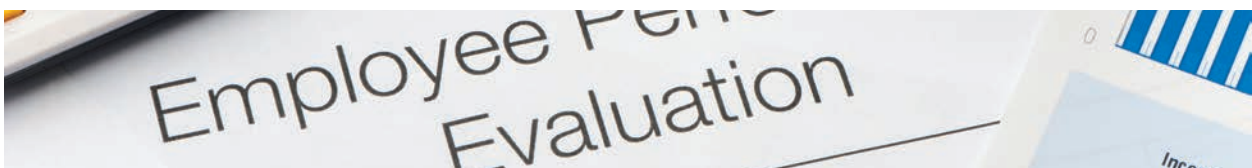
Table 4.6 presents hazard ratios from models of unemployment duration, using labour force status at the time of interview in each wave. Two models are estimated. In both, an unemployment spell commences if a person is observed to be unemployed or marginally attached



Table 4.6: Factors affecting the likelihood of exiting unemployment—Persons aged 16–59 at the time of commencement of the unemployment spell

	<i>Excluding people who move from unemployment to out of the extended labour force</i>		<i>Including all people who commence an unemployment spell</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
<i>Spell duration (Reference category: 1 wave)</i>				
2 waves	0.83	0.77	0.77	0.61
3 waves	0.76	0.58	0.56	0.42
4 or more waves	0.71	0.48	0.27	0.31
<i>Current year (Reference category: 2002–2004)</i>				
2005–2006	0.90+	1.23	0.93+	1.19
2007–2008	0.78	0.96+	0.82	0.95+
2009–2011	0.62	0.77	0.72	0.95+
<i>Age group (Reference category: 16–19)</i>				
20–24	1.32	1.04+	1.41	1.14+
25–29	1.27	0.85+	1.43	0.78
30–34	1.17+	1.03+	1.13+	1.10+
35–39	1.05+	1.02+	1.04+	0.94+
40–44	1.47	0.78	1.09+	0.89+
45–49	1.07+	0.77	0.89+	0.76
50 and over	1.15+	0.87+	0.51	0.41
<i>Place of birth and Indigenous status (Reference category: Non-Indigenous native-born)</i>				
Indigenous	0.86+	0.75	0.87+	0.78
NESB immigrant	0.85+	0.79	0.87+	0.64
ESB immigrant	0.92+	0.89+	1.09+	0.83
<i>Family type (Reference category: Single person)</i>				
Couple	1.07+	1.02+	0.93+	0.87+
Couple with dependent children	1.03+	0.73	1.02+	0.62
Lone parent	1.12+	0.82	1.06+	0.77
Partner employed	1.33	1.13+	1.55	1.08+
<i>Educational attainment (Reference category: Less than high-school completion)</i>				
Degree or higher	1.44	1.38	1.68	1.63
Other post-school qualification	1.32	1.17	1.23	1.26
Completed high school	1.41	1.38	1.29	1.37
<i>Region (Reference category: Major urban)</i>				
Other urban	1.19	0.90+	1.20	0.92
Other region	1.04+	0.81	1.07+	0.82
<i>Housing tenure type (Reference category: Home owner)</i>				
Private rental	0.98+	0.78	0.99+	0.83
Public rental	0.68	0.46	0.60	0.42
Moderate disability	0.66	0.80	0.52	0.63
Severe disability	0.59	0.50	0.27	0.29
Number of observations	1,685	2,253	2,792	5,191

Notes: Estimates are hazard ratios obtained from Cox proportional hazards regression models. See the Technical Appendix for details. Sample comprises all unemployment spells observed at the time of interview and commenced in Waves 2 to 11 (2002–2011). + indicates estimate is not significantly different from 1 at the 10% level.



to the labour force (an expanded definition of unemployment). In the first model, only incomplete spells and spells that exit to employment are included in the sample. That is, if a person moves from unemployment to out of the labour force (and not marginally attached), the unemployment spell is excluded from the sample. The second model retains people who move from unemployment to out of the labour force, but treats the unemployment spell as continuing when a person moves from unemployment to not in the labour force. Thus, this model estimates the determinants of exit from non-employment to employment of people who initially become unemployed.¹

As described in Chapter 2 in respect of Table 2.4, a hazard ratio of greater than 1 implies a positive association between the explanatory variable and the probability of exiting unemployment or non-employment, while a hazard ratio of less than 1 implies a negative association.

Considering first the effects of spell duration on the likelihood of exiting unemployment, the estimates show a pattern of negative ‘duration dependence’: the longer the spell duration, the less likely is exit. This is particularly the case for the model of non-employment duration. Significant differences are evident across years that are broadly consistent with movements in the overall unemployment rate, with hazard ratios highest in the early years of the HILDA Survey period and lowest in the years at the end of the survey period.

No consistent patterns across age groups are evident, with the important exception for the model of non-employment, which shows those aged 50 and over who commence an unemployment spell are much less likely to exit non-employment. No significant differences by Indigenous

and immigrant status are evident for males, but Indigenous females and NESB immigrant females are, all else equal, less likely than other females to exit unemployment or non-employment. Females with dependent children are also considerably less likely to exit to employment than other females. There are also no significant differences by family type for males, but having a partner who is employed acts to increase the likelihood of moving into employment for males—an effect that is not evident for females.

Educational attainment (see Box 7.1 on page 68 for details on the classification of educational attainment) is an important factor, those with university degrees having the highest probability of moving into employment and those who have not completed high school (and have no post-school qualifications) having the lowest probability. Effects of region of residence differ for males and females. Holding other factors constant, males living in ‘other urban’ regions are more likely to move into employment than males living in other regions, while females are most likely to move into employment if living in major urban areas, and least likely to move into employment if living in non-urban regions. Housing tenure type is also associated with significant differences in likelihood of moving into employment. Home

owners are, all else equal, the most likely to move into employment, while public housing tenants are the least likely. Finally, the presence of a disability, and particularly a severe disability, substantially reduces the prospects of moving into employment.

Labour market earnings

Earnings levels and distribution

Earnings represent a key dimension of labour market outcomes. A worker’s earnings per hour measures the rate at which his or her labour is rewarded in the labour market, and thus provides a measure of the value of that worker’s labour. Earnings are also an important contributor to an individual’s economic wellbeing, being the main income source for most working-age people. The HILDA Survey data allow us to not only examine workers’ earnings at a point in time, and track movements in overall earnings levels, but also to track individuals’ earnings progression over time.

We begin by describing the earnings distribution in each year, presenting cross-sectional snapshots in order to provide an overall picture of earnings outcomes and changes over the period spanned by the HILDA Survey. Figures 4.1 and 4.2

Box 4.3: HILDA Survey measures of labour market earnings

The HILDA Survey does not ask respondents to report their hourly wage; rather, usual weekly (typically gross) earnings and usual weekly hours of work are obtained from everyone who is employed. Hourly rates of pay can then be calculated from this information. The hourly rate of pay so obtained is ‘current usual earnings per hour worked’. While the hourly wage rate is the appropriate focus when interest is in the rate at which labour is rewarded, one concern that arises in hourly wage rate analysis is that additional measurement error is introduced by dividing reported weekly earnings by reported weekly hours of work. This provides one rationale for examining weekly earnings, at least as an augmentation to the study of hourly earnings. Another reason for examining weekly earnings is that, for full-time employees who are paid a salary, the notion of an hourly wage is less relevant. For example, a full-time employee may report working more than 40 hours per week, but is implicitly only paid for 40 hours. Possibly, the longer hours of work reflect a preference of the worker to work longer hours at a lower intensity per hour.

¹ An alternative to these two models is to estimate a more complicated model, known as a competing risks model, which could simultaneously examine the determinants of both exits to employment and exits to out of the labour force. Estimates from these models are more difficult to interpret and so are not presented in this report.



present graphs of summary measures of the male and female earnings distributions over the 2001 to 2012 period, plotting the mean, median, 10th percentile, 90th percentile and Gini coefficient. Figure 4.1 examines weekly earnings of full-time employees, while Figure 4.2 examines hourly earnings of part-time employees.²

Over the full 2001 to 2012 period, the graphs show mean

weekly earnings of full-time employees increased by 21.4% for males and 19.6% for females, while the Gini coefficient increased by 5.4% for males and 7.4% for females. For hourly earnings of part-time employees, the mean increased by 20.2% for males and by only 2.4% for females, while the Gini coefficient increased by 2.3% for males and *decreased* by 24% for females—however, the

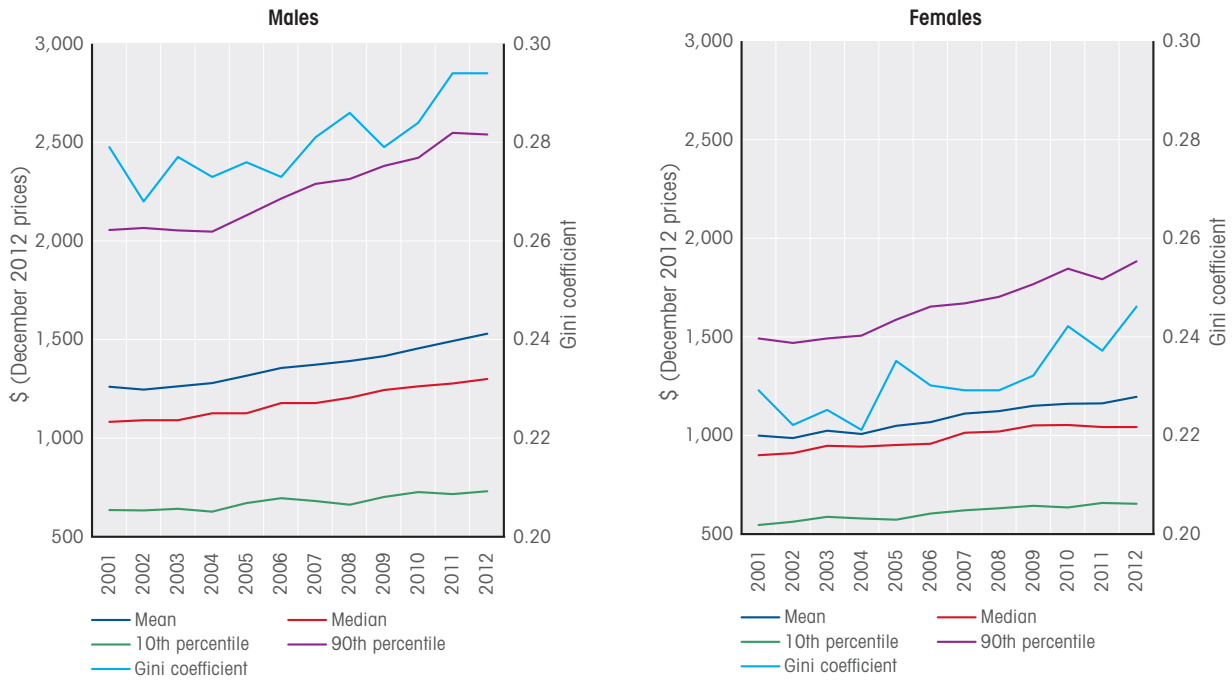
Gini coefficient for hourly earnings of part-time employees exhibits considerable year-to-year fluctuation for both males and females, so it is difficult to discern the underlying trend.

Earnings progression

The cross-sectional earnings information presented in Figures 4.1 and 4.2 do not tell us how individual workers have fared, and

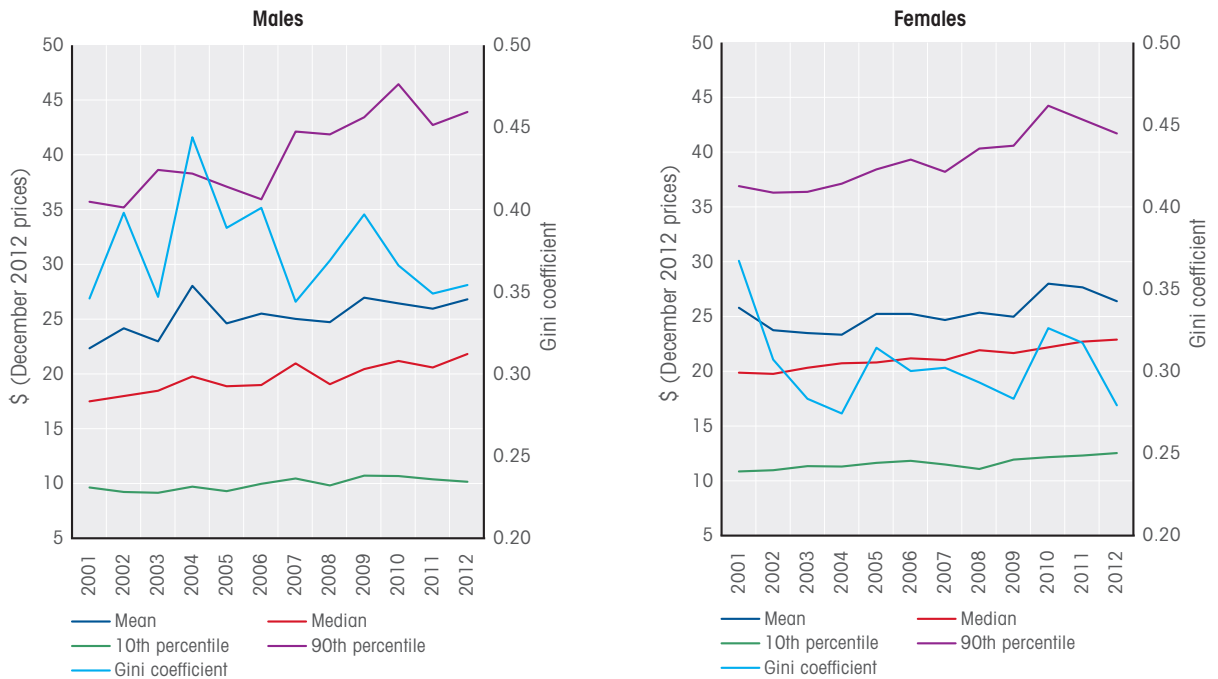
² Note that Figures 4.1 and 4.2 are for earnings of *employees* and therefore exclude earnings of the self-employed and employers, whose earnings are often confounded with returns on capital invested in the business, either because reported earnings include a return on capital, or because reported capital income includes a component that is actually a return on labour. Full-time employment is defined to be a situation in which usual weekly hours of work are 35 or more. In the case where a respondent holds more than one job, we restrict analysis to earnings and hours worked in the respondent's main job.

Figure 4.1: Weekly earnings of full-time employees



Note: Weekly earnings less than \$100 at December 2012 prices have been excluded.

Figure 4.2: Hourly earnings of part-time employees



Note: Hourly wages less than \$2 and more than \$500 at December 2012 prices have been excluded.



Table 4.7: Change in weekly earnings of full-time employees

	Base year			
	2001–2003	2004–2007	2008–2009	2010–2011
Change over 1 year among those who were full-time employees in both years				
<i>Males</i>				
Mean percentage wage change	8.8	9.2	7.6	8.6
Median percentage wage change	2.3	3.1	2.2	2.4
90th percentile percentage wage change	37.6	40.4	34.3	36.6
Wage declined (%)	41.7	40.5	42.4	42.1
<i>Females</i>				
Mean percentage wage change	7.6	8.3	7.0	8.5
Median percentage wage change	2.4	3.1	2.4	2.3
90th percentile percentage wage change	32.7	36.2	32.2	34.5
Wage declined (%)	40.9	38.9	40.7	41.3
Change over 5 years among those who were full-time employees in all 6 years				
<i>Males</i>				
Mean percentage wage change	30.3	26.6	–	–
Median percentage wage change	14.9	14.3	–	–
90th percentile percentage wage change	85.0	75.4	–	–
Wage declined (%)	25.5	27.3	–	–
<i>Females</i>				
Mean percentage wage change	26.2	24.6	–	–
Median percentage wage change	16.1	16.8	–	–
90th percentile percentage wage change	72.1	67.6	–	–
Wage declined (%)	22.5	22.3	–	–

in particular whether some workers have experienced more rapid earnings progression than others. There are many ways of examining earnings progression over time, and some of these ways have been presented in previous volumes of this report. In this year's report, a brief analysis is presented of the distribution of earnings changes of full-time employees over 1-year and 5-year intervals.

Table 4.7 shows that, be it over 1 year or 5 years, the mean earnings change of those who are

full-time employees in all years in the interval is greater than the change in mean earnings of all full-time employees. For example, the mean 1-year change in real earnings of full-time employees is approximately 7% to 9%, whereas Figure 4.1 shows annual increases in mean earnings of full-time employees of approximately 2%.

At first glance, these differences appear contradictory; however, they are explained simply by the fact that each year some people start working full-time (typically at

relatively low wages), while some people cease working full-time (often at relatively high wages). Thus, for those who remain in full-time employment, earnings growth is on average considerably higher than what you might be led to believe simply by examining changes over time in the cross-sectional means. That said, it is also clear that there is considerable variation in earnings changes among those who remain full-time employment. Indeed, from one year to the next, approximately 40% of full-time employees

Table 4.8: Median percentage change in weekly earnings of full-time employees, by whether changed jobs

	Males				Females			
	2001–2003	2004–2007	2008–2009	2010–2011	2001–2003	2004–2007	2008–2009	2010–2011
One-year change								
Changed jobs	5.9	9.4	5.1	10.2	5.0	6.6	4.3	8.0
Did not change jobs	2.1	2.7	2.1	1.9	2.2	2.6	2.3	1.7
Five-year change								
Changed jobs	25.2	23.1	–	–	23.0	24.6	–	–
Did not change jobs	11.7	11.6	–	–	13.1	14.8	–	–

experience a decrease in real earnings, and even over a 5-year period, approximately one-quarter of full-time employees experience a real decline in earnings.

Table 4.8 considers whether earnings changes of full-time employees systematically differ depending on whether the employee changed employers. The clear pattern for both males and females is that median earnings growth is substantially higher for those who change jobs. Thus, it would seem that, on average, achieving high earnings growth requires one to change jobs.

Employees' perceptions of employment prospects

Employees' perceptions of their job security and employment prospects are likely to be important factors in their labour market decisions. For example, an employee who believes he is likely to be dismissed from his current job is more likely to be actively searching

Box 4.4: HILDA Survey measures of perceived employment prospects

Each year, employee respondents are asked the following three questions:

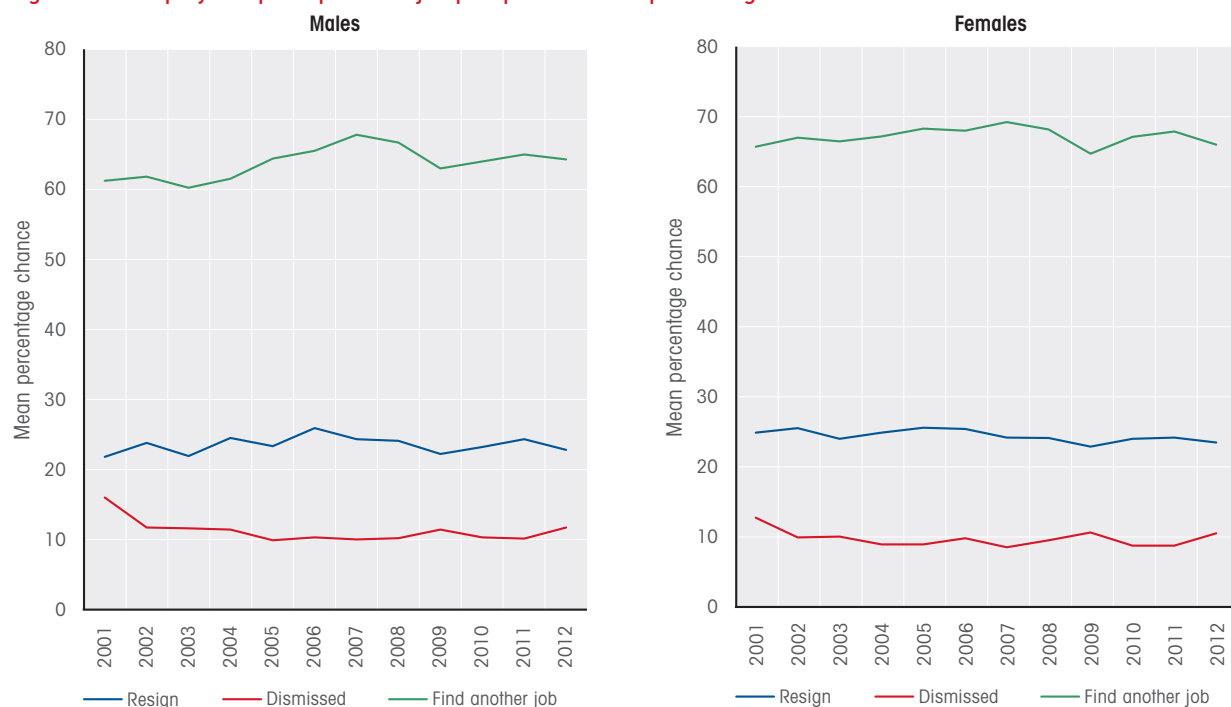
1. *I would like you to think about your employment prospects over the next 12 months. What do you think is the per cent chance that you will leave your job voluntarily (that is, quit or retire) during the next 12 months?*
2. *What do you think is the per cent chance that you will lose your job during the next 12 months? (That is, get retrenched or fired or not have your contract renewed.)*
3. *If you were to lose your job during the next 12 months, what is the per cent chance that the job you eventually find and accept would be at least as good as your current job, in terms of wages and benefits?*

for another job, and indeed is probably more likely to quit that job than an employee who feels more secure in his current job. Each year, respondents who are employees are asked three key questions about their employment prospects: the likelihood of quitting their current job; the likelihood of being dismissed from their current job; and the likelihood of being able to find another equally good job in the event of losing their current job (see Box 4.4, above).

Figure 4.3 shows the mean responses of employees to these three questions in each wave of the HILDA Survey. Largely reflecting broader macroeconomic conditions, for both males and females there is a slight downward trend in perceived likelihood of job dismissal, and a

slight upward trend in perceived prospects of finding another job, between 2001 and 2007, after which there is a slight reversal of the trends. Particularly notable is the uptick in the mean probability of dismissal in 2012, which increased 1.6 percentage points for males and 1.8 percentage points for females, and the drop in the mean probability of finding another job as good, which declined 0.7 percentage points for males and 1.9 percentage points for females. These changes seem to have anticipated the rise in unemployment, from 5.4% to 5.9%, that occurred in 2013 (see ABS, 2013). The mean reported likelihood of resigning, however, shows no clear trends over the 2001 to 2012 period.

Figure 4.3: Employees' perceptions of job prospects—Mean percentage chance of each event



Determinants of perceptions of job prospects

While Figure 4.3 provides strong indications that macroeconomic conditions are an important influence on employees' perceived job prospects, it is also interesting to look at the factors that determine differences in perceptions across employees. Table 4.9 presents results of regression models investigating these factors, examining the roles played by both employee characteristics and job characteristics. Specifically, regression models are estimated of the perceived percentage chance the employee will be dismissed from the current job, and the perceived percentage chance that, in the event of job loss, the employee would be able to obtain another job as good as the current job.

Holding other factors constant, perceived chances of dismissal do not significantly differ for males and females, but males rate their chances of finding another job 1 percentage point higher than females. There are significant differences in perceived job prospects across age groups, with older employees reporting higher chances of dismissal and lower chances of finding another job. Employees aged 55 and over have particularly low assessed chances of finding another job in the event of job loss. More highly educated employees have higher perceived risks of dismissal, all else equal, but they also have considerably higher assessed chances of getting equally good alternative employment.

No significant differences in dismissal probability by region of residence are evident. However, consistent with there being more job opportunities in major urban areas, employees living in these areas have a higher assessed chance of finding another job.

Other factors held constant, full-time and part-time employees do not have different assessed risks

Table 4.9: Factors affecting employees' perceptions of job prospects

	Dismissed	Find another job
Male	0.56+	1.07
<i>Age group (Reference category: 15–24)</i>		
25–34	0.31+	–1.81
35–44	1.72	–2.42
45–54	2.47	–4.03
55 and over	2.21	–12.36
<i>Educational attainment (Reference category: No post-school qualifications)</i>		
Degree or higher	1.24	6.85
Other post-school qualification	0.78	4.23
<i>Region (Reference category: Other region)</i>		
Major urban	–0.07+	3.91
Other urban	0.56+	0.27+
Employed full-time	0.51+	1.38
Casual employee	5.20	0.81+
Fixed-term contract	6.55	0.08+
Union member	0.04+	–0.49+
Work weekends	–1.70	0.77+
Work nights or irregular hours	0.38+	0.23+
Job tenure (years)	–0.24	–0.57
Hourly wage in main job (\$, December 2012 prices)	0.02	–0.02
<i>Occupation (Reference category: Labourers)</i>		
Managers	–1.71	0.18+
Professionals	–1.28	3.27
Technicians and trades workers	–1.15	1.38+
Community and personal service workers	–0.96	0.41+
Clerical and administrative workers	–0.98+	–1.87
Sales workers	–1.52	3.66
Machinery operators and drivers	0.50+	0.95+
<i>Industry (Reference category: Other services)</i>		
Agriculture, forestry and fishing	3.10	–2.34+
Mining	2.88	–2.79+
Manufacturing	2.23	–4.75
Electricity, gas, water and waste services	0.94+	–6.95
Construction	4.25	–0.13+
Wholesale trade	2.07	–4.85
Retail trade	0.07+	–0.86+
Accommodation and food services	–0.94+	3.03
Transport, postal and warehousing	0.08+	–3.26
Information media and telecommunications	2.60	–5.74
Financial and insurance services	2.52	–4.12
Rental, hiring and real estate services	–0.91+	0.40+
Professional, scientific and technical services	0.72+	–2.27+
Administrative and support services	0.62+	–1.65+
Public administration and safety	–0.06+	–6.47
Education and training	0.13+	–0.61+
Health care and social assistance	–2.33	5.01
Arts and recreation services	–1.02+	–5.54
Private for-profit sector	–0.26+	4.59
<i>Firm size (Reference category: 100 or more employees)</i>		
Fewer than 20 employees	–0.40+	–0.74+
20–99 employees	–0.12+	0.38+
Number of observations	27,222	26,300
Number of persons	10,016	9,861

Notes: Table presents coefficient estimates from linear random-effects models. See the Technical Appendix for details. Sample comprises all employees in all waves (2001–2012). Models also contain controls for survey year (not reported). + indicates estimate is not significantly different from 0 at the 10% level.



Box 4.5: Casual employment and fixed-term employment

Casual employment is a form of employment unique to Australia. It is characterised by flexibility for employers and employees in the number and timing of hours worked from week to week (including the ability for employers to very readily reduce hours to 0). Typically, casual employees are not entitled to paid annual and sick leave.

Fixed-term employees are employed on contracts that specify an end date for the employment relationship. Note that many employees on fixed-term contracts nonetheless remain employed in the same job after the expiration of the contract, either because a new fixed-term contract is commenced or because they convert to continuing or permanent employees.

of dismissal, but full-time employees are more confident of finding another job in the event of dismissal. Unsurprisingly, casual and fixed-term employees (defined in Box 4.5, above) have higher perceived risks of dismissal than continuing/permanent employees, although they have no less confidence than other employees that they will find another equally good job.

Somewhat unexpectedly, members of trade unions are no more confident of avoiding dismissal

than other employees. Increasing job tenure acts to increase perceived job security, but also acts to decrease perceived ability to find another equally good job. Higher hourly earnings reduce both perceived job security and perceived chances of finding another equally good job.

Variables for occupation of employment (see Box 4.6, below) show labourers, and machinery operators and drivers, have the lowest perceived job security and managers and sales workers have

the highest perceived job security. Professionals and sales workers have the most confidence in being able to obtain another equally good job, while clerical and administrative workers have the least confidence.

Variables for industry of employment (see Box 4.7, page 49) show seven industries have relatively low perceived job security: construction; agriculture, forestry and fishing; mining; information media and telecommunications; financial and insurance services; manufacturing; and wholesale trade. Health care and social services stands out as an industry having high job security. Employees in the health care and social assistance industry and the accommodation and food services industry have the highest perceived chances of finding equally good jobs in the event of job loss, while employees in electricity, gas, water and waste services, public administration and safety, information media and telecommunications, and arts and recreation services have the lowest perceived prospects for equally good alternative employment.

Box 4.6: Occupation classification

Occupation variables in this report are based on the first (2006) edition of the Australian Bureau of Statistics (ABS) ANZSCO classification system. ANZSCO stands for the Australian and New Zealand Standard Classification of Occupations. It is based on a conception of types of tasks and skill-level requirements. It has six 'levels', with 10 occupation groups distinguished at the highest level of aggregation, known as the 1-digit level, 54 groups distinguished at the next (2-digit) level of aggregation, and so on. See ABS (2006) for details. In this report, only the 1-digit level classification is used.

Are perceptions justified?

While there are systematic differences in employees' perceptions of their employment prospects depending on their personal and job characteristics, a natural question is whether these perceptions actually reflect the reality faced by employees. Table 4.10 takes a step towards answering this question. The upper panel examines whether the perceived chances of dismissal differ for employees who lost their job over the subsequent year compared with employees who did not lose their job. The lower panel examines whether the perceived chances of obtaining a job as good as the current job differ between dismissed employees who did get another job as good as their original job and dismissed employees who did not. For the lower panel, an employee is deemed to have got a job 'as good' if they were employed (in another job) at the time of the next wave's interview and the real wage was at least equal to the wage in the job from which they were dismissed.

Clearly evident is that perceptions have predictive power, particularly in respect of chances of job loss. The mean perceived chance of dismissal was approximately 10% for employees who were not dismissed, and approximately 28% for employees who were dismissed. For the chances of getting another job as good as the current job, the predictive power of expectations is lower, with the mean perceived chance of getting as good a job approximately 63% for those who did not in fact get another job as good, compared with 71% for those who did get another job as good. Note, however, that while the question on dismissal specified 'the next 12 months', the question on getting another job simply specified 'eventually', so that it is possible that the difference in the mean predicted

Table 4.10: Perceptions of job prospects and subsequent job outcomes, 2001–2012 (%)

Mean perceived chance of dismissal, by whether actually dismissed or not		
	<i>Not dismissed</i>	<i>Dismissed</i>
Males	10.2	27.7
Females	8.8	28.6
Persons dismissed from their job: Mean perceived chance of getting another job as good as current job, by whether actually got another job as good		
	<i>Did not get another job as good</i>	<i>Got another job as good</i>
Males	63.1	70.8
Females	63.6	71.0

Box 4.7: Industry classification

Industry variables in this report are based on the Australian Bureau of Statistics (ABS) ANZSIC classification system. ANZSIC is the Australia and New Zealand Standard Industry Classification. It classifies the economic activity of firms and other employers, and has a structure comprising categories at four levels: 'divisions' (the broadest level); 'subdivisions'; 'groups'; and 'classes' (the finest level). These levels are commonly referred to as '1-digit', '2-digit', '3-digit' and '4-digit', reflecting the number of digits used in the code to describe each category. At the 1-digit level, which is used in this report, 17 industry categories are distinguished. See ABS (2008) for details.

chance of getting as good a job would be greater if a longer time-frame (such as two or three years) was adopted. That is, some of the employees who did not have as

good a job in the next wave, but had assessed their chances of *eventually* getting such a job as high, may in fact have eventually done so.





5

Health and subjective wellbeing



While much of the HILDA Survey is concerned with the economic wellbeing of people, extensive information is also collected on the health, lifestyle behaviours, social activity and education participation of respondents. In addition, views and perceptions on a variety of life domains are elicited, including levels of satisfaction with these life domains. In this section, we make use of some of this information to present cursory analyses of the 'subjective wellbeing' and physical and mental health of the Australian community.

Population health and disability

General health

A measure of general health is provided by the SF-36 survey instrument (see Box 5.1, below), which has been administered by the HILDA Survey in every wave as part of the self-completion questionnaire. The SF-36 general health measure is based on responses to five items which obtain respondent assessments of overall health and expectations about overall health. It has 21 distinct possible values which are transformed to range between 0 and 100.¹ In the population as a whole, the median score is 72.

Table 5.1 presents summary information, disaggregated by sex and age group, on the cross-sectional distribution of the SF-36 general health measure and individual-level changes in the measure over 5-year and 10-year time-frames. All 12 waves of the HILDA Survey (2001–2012) are used to produce the estimates, although of course the last wave from which a 5-year change can be calculated is Wave 7 (2007) and the last wave from which a 10-year change can be calculated is Wave 2 (2002).

Self-reported general health has a clear pattern of declining with age. The mean score declines from 74.8 among males aged 15–29 to 59.0 among males aged 70 and over, and from 71.6 among females

Box 5.1: SF-36 measures of health

The SF-36 Health Survey is a 36-item questionnaire that is intended to measure health outcomes (functioning and wellbeing) from a patient point of view. It was specifically developed as an instrument to be completed by patients or the general public rather than by medical practitioners, and is widely regarded as one of the most valid instruments of its type. See <http://www.sf-36.org/> for further details.

The SF-36 measures of general health and mental health are used in this report. The scores for both measures potentially range from 0 to 100. Where SF-36 health measures are used as explanatory factors in analysis in other chapters in this report, indicator variables are created for poor general health and poor mental health. There are no universally accepted threshold scores for defining poor general and mental health, but for the purposes of this report, poor general health is defined as a score less than or equal to 37, on the basis that approximately 10% of the population are at or below this threshold. Similarly, poor mental health is defined as a score less than or equal to 52, on the basis that approximately 10% of the population are at or below this threshold.

¹ The actual number of distinct values of the SF-36 general health measure in the HILDA Survey data is more than 21 because of procedures, as per the SF-36 guidelines, for dealing with item non-response.

aged 15–29 to 59.1 among females aged 70 and over. Consistent with this cross-sectional pattern, the mean change in general health of individuals over a 5-year period is –2.3 for males and –1.7 for females, while the mean change over a 10-year period is –5.0 for males and –4.1 for females.

Nonetheless, the table shows there is considerable variation in changes at the individual level. Over both the 5-year and 10-year time-frames, only about half the population experiences a decline in general health, and there is even considerable movement out of the ‘poor’ general health category, with

approximately 4% of the 10% of the population in poor health in one year no longer in poor health 5 or 10 years later.

Mental health

The SF–36 instrument also produces a measure of mental health, which is based on

Table 5.1: Levels and changes in SF–36 measure of general health, 2001–2012 (pooled)

	15–29	30–39	40–49	50–59	60–69	70 and over	Total
Males							
<i>Levels</i>							
Mean health (0–100 scale)	74.8	72.0	68.5	65.5	61.3	59.0	68.5
Below-median health (< 72) (%)	34.5	38.9	44.7	49.3	56.2	61.8	44.7
Poor health (\leq 37) (%)	4.0	5.6	9.0	13.1	19.0	20.4	10.0
<i>Change over 5 years</i>							
Mean change in health	–1.9	–1.7	–2.4	–2.3	–2.8	–4.8	–2.3
Health decreased (%)	48.0	47.6	48.5	48.2	48.8	55.1	48.6
Entered below-median health (%)	15.8	15.0	13.9	13.2	13.8	17.7	14.7
Exited below-median health (%)	12.1	10.8	9.1	8.5	8.0	7.6	9.8
Entered poor health (%)	3.6	3.5	5.7	6.8	6.7	10.3	5.4
Exited poor health (%)	2.6	3.7	4.1	4.0	5.1	5.1	3.8
<i>Change over 10 years</i>							
Mean change in health	–3.4	–4.7	–5.4	–5.0	–7.0	–9.6	–5.0
Health decreased (%)	52.7	56.5	55.2	53.9	60.8	66.1	55.6
Entered below-median health (%)	18.0	19.8	19.9	19.2	22.8	26.2	19.8
Exited below-median health (%)	10.6	9.1	7.9	6.6	8.8	8.1	8.7
Entered poor health (%)	4.7	5.7	7.9	8.5	10.6	9.6	7.0
Exited poor health (%)	3.1	4.1	3.0	4.0	4.4	3.9	3.6
Females							
<i>Levels</i>							
Mean health (0–100 scale)	71.6	72.9	69.6	65.7	63.8	59.1	68.3
Below-median health (< 72) (%)	39.5	35.4	41.3	48.3	51.3	62.2	44.3
Poor health (\leq 37) (%)	6.6	6.9	10.4	14.3	15.9	19.5	11.1
<i>Change over 5 years</i>							
Mean change in health	0.4	–1.5	–2.3	–2.1	–2.8	–4.7	–1.7
Health decreased (%)	41.9	45.8	48.4	46.6	50.2	53.5	46.7
Entered below-median health (%)	13.6	13.0	13.8	12.9	14.6	16.0	13.7
Exited below-median health (%)	14.6	10.8	9.8	9.9	8.1	7.4	10.7
Entered poor health (%)	3.9	4.5	5.7	6.9	6.7	10.4	5.8
Exited poor health (%)	4.6	3.0	4.3	4.8	5.0	4.4	4.3
<i>Change over 10 years</i>							
Mean change in health	–1.2	–3.6	–5.1	–4.4	–7.3	–7.9	–4.1
Health decreased (%)	45.0	50.3	54.1	53.8	61.4	59.9	52.1
Entered below-median health (%)	17.6	17.9	19.6	18.2	22.2	24.2	19.1
Exited below-median health (%)	14.1	11.5	9.7	9.7	7.3	7.5	10.8
Entered poor health (%)	3.9	5.5	9.1	7.6	10.8	11.7	7.1
Exited poor health (%)	5.1	3.0	4.3	5.2	3.9	4.7	4.4

Note: The age groups for the estimates of changes in health refer to age at the *beginning* of the period over which the change is evaluated.

responses to five items asking respondents how much of the time during the last four weeks they had been feeling certain ways, such as 'calm and peaceful' and 'so down in the dumps nothing could cheer you up'. It has 26 distinct possible values, which are transformed to

range between 0 and 100. In the population as a whole, the median score is 76.

Table 5.2 presents, for the SF-36 mental health measure, analogous information to Table 5.1. Unlike general health, mental health does not diminish with age, and indeed a

slight positive association is evident in the 40–49, 50–59 and 60–69 age ranges. Correspondingly, the average change in mental health score at the individual level is close to 0 in most age groups for both males and females, and similar proportions move into and

Table 5.2: Levels and changes in SF-36 measure of mental health, 2001–2012 (pooled)

	15–29	30–39	40–49	50–59	60–69	70 and over	Total
Males							
<i>Levels</i>							
Mean health (0–100 scale)	74.4	74.7	74.1	75.7	77.1	77.2	75.2
Below-median health (< 76) (%)	40.8	39.3	41.4	37.2	34.5	35.8	38.9
Poor health (\leq 52) (%)	12.5	11.9	13.2	11.9	10.8	10.1	12.0
<i>Change over 5 years</i>							
Mean change in health	–0.5	0.0	0.2	1.1	0.2	–2.2	0.0
Health decreased (%)	43.8	41.7	41.9	36.8	40.0	46.9	41.6
Entered below-median health (%)	15.3	13.5	13.3	9.8	11.2	15.6	13.1
Exited below-median health (%)	14.6	14.1	14.0	11.7	11.1	9.0	13.1
Entered poor health (%)	8.3	7.9	6.6	6.0	4.7	6.5	6.9
Exited poor health (%)	7.5	6.7	7.3	6.5	5.2	5.2	6.7
<i>Change over 10 years</i>							
Mean change in health	0.2	0.9	–0.1	1.9	–0.5	–4.3	0.3
Health decreased (%)	42.5	41.7	39.9	36.4	42.1	50.1	41.0
Entered below-median health (%)	14.9	14.5	16.0	9.6	13.7	17.8	14.1
Exited below-median health (%)	15.7	18.2	13.8	14.0	10.9	8.2	14.7
Entered poor health (%)	7.5	8.7	7.4	5.7	6.2	9.7	7.4
Exited poor health (%)	8.4	8.2	8.2	5.8	6.1	3.5	7.4
Females							
<i>Levels</i>							
Mean health (0–100 scale)	71.3	72.3	72.5	73.1	75.2	75.1	72.9
Below-median health (< 76) (%)	48.4	44.7	44.4	44.0	38.9	42.1	44.5
Poor health (\leq 52) (%)	15.9	15.3	15.9	15.4	12.6	12.1	14.9
<i>Change over 5 years</i>							
Mean change in health	1.1	0.7	0.4	0.6	0.2	–1.3	0.5
Health decreased (%)	40.7	41.0	41.1	39.7	39.8	44.7	40.9
Entered below-median health (%)	14.5	13.8	13.8	12.6	12.2	13.9	13.6
Exited below-median health (%)	17.9	15.1	14.7	14.6	13.1	11.3	15.0
Entered poor health (%)	9.0	7.8	9.1	7.5	6.2	7.9	8.1
Exited poor health (%)	10.7	9.2	8.6	7.5	6.4	5.7	8.5
<i>Change over 10 years</i>							
Mean change in health	1.9	1.2	0.8	2.4	–1.4	–1.8	1.0
Health decreased (%)	39.2	39.5	40.4	35.0	43.9	47.1	39.8
Entered below-median health (%)	15.4	12.4	15.2	10.5	14.4	15.4	13.8
Exited below-median health (%)	20.6	16.8	16.2	18.5	11.9	12.1	17.1
Entered poor health (%)	10.0	8.0	8.2	6.9	7.9	8.0	8.3
Exited poor health (%)	10.5	8.1	9.4	9.8	5.3	7.2	8.9

Note: The age groups for the estimates of changes in mental health refer to age at the *beginning* of the period over which the change is evaluated.

Box 5.2: Defining disability

The International Classification of Functioning, Disability and Health (ICF), produced by the World Health Organisation, defines disability as an umbrella term for impairments, activity limitations and participation restrictions. It denotes the negative aspects of the interaction between an individual's health conditions and the various contextual (environmental and personal) factors of that individual. In this report, a person is defined as having a disability if they have 'any long-term health condition, impairment or disability that restricts the individual in everyday activities and which has lasted, or is likely to last, for 6 months or more'. This is an 'operational' definition of disability which is very similar to that used in many household surveys, such as the Australian Bureau of Statistics Survey of Disability, Ageing and Carers.

Disability severity is typically conceived in terms of restrictions in the core activities of self-care, communication and mobility. The HILDA Survey does not collect information each wave on core activity restrictions, but does collect information on the extent to which health conditions limit the amount of work an individual can do (on a 0 to 10 scale, where 0 equals 'not at all' and 10 equals 'unable to do any work'). In this report, we use a measure of disability severity based on this information, defining three levels of severity: no work restriction (0); moderate work restriction (1–7); and severe work restriction (8–10).



Box 5.3: Indicators of financial stress

In each wave, HILDA Survey respondents have been asked if, since the beginning of that year, because of a shortage of money they:

1. Could not pay electricity, gas or telephone bills on time.
2. Could not pay the mortgage or rent on time.
3. Pawned or sold something.
4. Went without meals.
5. Were unable to heat the home.
6. Asked for financial help from friends or family.
7. Asked for help from welfare/community organisations.

In this report, two levels of financial stress are distinguished based on responses to this question: 1 or 2 of the above events occurred; and 3 or more of the above events occurred.

out of poor mental health over both 5-year and 10-year time-frames.

A notable exception is that mental health among men and women aged 70 and over on average deteriorates considerably, and particularly striking is that, over a 10-year period, 9.7% of men aged 70 and over move into the poor health category, while only 3.5% of men in this age group move out of the category.

Disability

Information on the presence of disabilities has been collected in every wave of the HILDA Survey. Each year, respondents are asked whether they have each of 17 long-term health conditions or impairments that restrict everyday activities and have lasted, or are likely to last, for 6 months or more. Those with one or more conditions are then asked to indicate, on a scale from 0 (not at all) to 10 (unable to do any work), the extent to which the conditions limit the amount of work they can do. It is therefore possible to construct a measure of disability and disability severity using this information (see Box 5.2, above).

Table 5.3 presents, for our measure of disability, information of the same nature as presented in Tables 5.1 and 5.2 for general health and mental health. A 'restricting' disability is one that limits the amount of work that an individual can do (a rating of 1 or more out of 10), while a 'severe' disability is one that severely limits the amount of work the individual can do (a rating of 8 or more out of 10).

The table shows that disability prevalence, and the severity of disability, is very strongly related to age. Approximately 60% of people aged 70 and over have a disability according to our definition of disability, and 13.0% of women and 14.5% of men in this age range have a severely restricting disability. At the other end of the age spectrum, 11.1% of males aged 15–29 and 12.3% of females

Table 5.3: Prevalence and changes in disability by age group, 2001–2012 (pooled, %)

	15–29	30–39	40–49	50–59	60–69	70 and over	Total
Males							
Have a disability	11.1	16.4	22.8	32.3	48.3	59.9	26.3
Have a restricting disability	5.9	10.0	14.2	22.6	35.8	43.9	17.7
Have a severe disability	1.0	2.1	3.6	8.1	11.2	14.5	5.2
<i>Changes over 5 years</i>							
Acquired disability	6.7	9.8	10.9	14.4	15.5	24.4	11.7
Ceased being disabled	6.3	8.0	7.0	7.2	10.4	9.0	7.6
Acquired restricting disability	4.3	5.5	6.8	9.6	12.7	23.3	8.2
Ceased having a restricting disability	3.6	5.2	4.4	5.0	10.6	9.2	5.4
Acquired a severe disability	1.0	1.5	3.1	5.8	6.1	13.8	3.8
Ceased having a severe disability	0.8	1.2	2.0	3.5	6.0	5.0	2.4
<i>Changes over 10 years</i>							
Acquired disability	8.4	10.9	18.4	20.1	23.5	39.9	15.8
Ceased being disabled	6.6	6.2	5.7	5.9	7.7	5.3	6.3
Acquired restricting disability	5.0	7.1	10.2	16.1	19.2	32.7	10.9
Ceased having a restricting disability	4.0	4.0	3.5	5.1	8.5	5.9	4.6
Acquired a severe disability	1.7	2.5	5.2	7.6	9.4	17.7	5.0
Ceased having a severe disability	0.5	1.0	1.4	4.1	5.0	2.8	1.9
Females							
Have a disability	12.3	15.7	21.6	32.9	43.8	60.8	26.8
Have a restricting disability	6.9	9.9	15.4	24.4	32.4	46.3	19.0
Have a severe disability	1.0	1.7	3.6	6.2	7.2	13.0	4.5
<i>Changes over 5 years</i>							
Acquired disability	8.1	9.1	12.8	17.2	19.7	21.2	13.2
Ceased being disabled	6.2	6.1	6.9	7.1	10.1	7.9	7.0
Acquired restricting disability	5.2	6.2	9.0	12.8	16.1	20.3	10.0
Ceased having a restricting disability	3.8	3.6	5.8	5.8	8.5	7.9	5.4
Acquired a severe disability	1.1	2.1	3.5	4.9	6.4	14.5	4.3
Ceased having a severe disability	0.7	1.2	1.7	2.7	3.8	4.0	2.0
<i>Changes over 10 years</i>							
Acquired disability	10.9	13.7	20.5	23.8	33.7	35.2	19.5
Ceased being disabled	6.1	4.7	4.1	6.4	6.4	3.8	5.3
Acquired restricting disability	6.8	9.3	15.2	17.7	26.3	29.1	14.3
Ceased having a restricting disability	3.6	3.0	5.1	5.2	6.5	4.6	4.4
Acquired a severe disability	1.3	3.5	5.8	6.7	11.6	17.9	5.7
Ceased having a severe disability	0.6	0.8	1.8	3.0	2.0	0.6	1.4



aged 15–29 have a disability, and only 1.0% have a severely restricting disability.

Reflecting its long-term nature, there is less fluidity in disability status evident over 5-year and 10-year time-frames than was evident for general health and mental health. In particular, there is relatively little movement out of disability, and especially severe disability. For example, over a 10-year period, over 5% of the population acquires a severe disability, while less than 2% ceases to have a severe disability.

The determinants of general health

Table 5.1 identified age as an important factor in determining general health. In this section, we look to more precisely quantify the effects of ageing, as well as investigate the roles played by a variety of other factors, including demographic characteristics, income, employment activity, health behaviours and body fat. Table 5.4 presents estimates from panel models of the determinants of an individual's SF-36 general health score.

Confirming the differences across age groups in Table 5.1, a strong negative relationship between general health and age is evident in Table 5.4. The strength of the relationship is stronger for males than females, although this largely arises from the absence of significant differences in health for females across the 15–24, 25–29, 30–34, 35–39 and 40–44 age groups. The 'age gradient' is similar for males and females at ages above the 40–44 age group, with the predicted general health score decreasing by approximately 10 in moving from the 40–44 age group to the 85 and over age group.

Holding other factors constant, self-reported general health is higher in more socio-economically advantaged regions, with a move from the bottom SEIFA decile to the top SEIFA

Table 5.4: Determinants of general health

	Males	Females
Current-wave variables		
<i>Age group (Reference category: 15–24)</i>		
25–29	-1.3	-0.2+
30–34	-3.0	0.9+
35–39	-3.9	-0.2+
40–44	-4.9	-0.7+
45–49	-7.0	-2.0
50–54	-8.1	-4.3
55–59	-9.2	-4.9
60–64	-10.4	-4.6
65–69	-10.5	-4.9
70–74	-12.4	-6.0
75–79	-13.7	-6.8
80–84	-13.8	-9.9
85 and over	-15.0	-11.3
<i>Region (Reference category: Other region)</i>		
Major urban	-0.9	-1.1
Other urban	-0.7+	-0.2+
SEIFA decile	0.4	0.4
Partnered	0.7	0.2+
<i>Family type (Reference category: Not a parent with dependent children)</i>		
Partnered, with dependent children	-0.2+	1.1
Lone parent	0.5+	0.0+
Equivalised income (\$'0,000, December 2012 prices)	0.1	0.1
<i>Financial stress (Reference category: No financial stress)</i>		
1 or 2 indicators of financial stress	-1.4	-1.7
3 or more indicators of financial stress	-3.2	-4.3
Previous-wave variables		
<i>Hours of paid work per week (Reference category: Not in the labour force and not retired)</i>		
1–15	1.4	1.3
16–30	2.8	1.5
31–40	3.2	1.9
41–50	3.5	2.0
51 and over	3.6	3.0
Unemployed	2.0	1.1
Retired	-2.1	-1.6
<i>Total hours of paid and unpaid work per week (Reference category: Less than 20)</i>		
20–40	0.3+	0.5+
41–60	0.3+	1.0
61–80	0.2+	1.5
81 and over	0.0+	1.4
<i>Smoking status (Reference category: Non-smoker)</i>		
Smoke daily	-3.8	-3.6
Smoke occasionally	-2.3	-2.1
<i>Usual alcohol consumption per week (Reference category: Never or rarely drink alcohol)</i>		
1–14 drinks	0.6	1.2
15–28 drinks	0.3+	1.6
29–42 drinks	-0.7+	-0.1+
42 or more drinks	-1.9	-3.8
<i>Exercise: Number of days per week (Reference category: 3–6)</i>		
Never	-4.0	-4.9
Less than once	-2.4	-2.6
1–2	-1.4	-1.2
7	0.6	1.8
Body Mass Index: Extent to which below normal weight (0 if not underweight)	-1.9	-0.2+
Body Mass Index: Extent to which above normal weight (0 if not overweight or obese)	-0.4	-0.4
Constant	72.6	68.9
Number of observations	21,850	22,831
Number of persons	6,737	7,269

Notes: Estimates are coefficient estimates from linear random-effects panel models. See the Technical Appendix for more information on these models. The models are estimated on Waves 6 to 12 (2006–2012) to allow inclusion of Body Mass Index, which is only available in those waves. + indicates estimate is not significantly different from 0 at the 10% level.

decile increasing the health measure by 4 for both males and females. (See Box 2.6 on page 18 for an explanation of SEIFA.) This may reflect differences across SEIFA deciles in individuals' characteristics, such as educational attainment. It could also in part reflect better access to health services in higher SEIFA deciles; however, seemingly at odds with this hypothesis is that, holding other factors constant, living in a major urban area lowers health compared with living in a non-urban area.

Living with a partner increases men's general health, but not women's; yet living with a partner and a dependent child increases women's general health, but not men's (relative to not having a

dependent child or being a lone parent). Household income positively impacts on health—each \$1,000 of equivalised income (at December 2012 prices) acts to increase the general health score by 0.1. While this may seem a small effect, consider the example of a household of two adults and two children moving from a household income of \$30,000 to a household income of \$250,000. The estimated coefficient on equivalised income implies this would increase the health score of each of the household members by 10, a very large change indeed. Further evidence that the household financial situation impacts on health is found for the measures of financial stress (see

Box 5.3, page 54), which show experience of financial stress has large and statistically significant adverse effects on health.

The remaining factors examined in Table 5.4 relate to behaviours which could change in response to health changes, rather than be the cause of changes in health. To reduce the potential for this 'endogeneity', variables for these factors are all measured in the wave previous to the wave in which health is measured.

Variables for hours of paid work and hours of total (paid and unpaid) work indicate work acts to improve general health, with no evidence that long hours of work (51 or more hours per week of paid work, and 81 or more hours of total work) are detrimental to health. However, even unemployment is associated with better health compared with non-participation in the labour force, suggesting other factors are driving the apparent relationship between labour force status and health. For example, movements out of the labour force may be precipitated by onset of disability which, for reasons that are not clear, does not immediately translate to deterioration in measured health.

Unsurprisingly, smoking reduces measured health, but regular consumption of alcohol does not appear to adversely affect health until quite high levels of consumption (42 or more drinks per week) are reached. Note, however, that long-term adverse health effects of drinking are not identified by the model, which only identifies whether drinking behaviour 1 year ago has implications for current health. Substantial health benefits of regular exercise are apparent, and it seems that it is optimal to exercise daily.

Two variables are included for Body Mass Index (BMI), a measure of body fat (see Box 5.4, above). The first variable measures the extent to

Box 5.4: Body Mass Index (BMI)

BMI is a crude measure of body fat. It is calculated by dividing weight (in kilograms) by height (in metres) squared (which have been collected by the HILDA Survey since Wave 6). A person is classified as 'underweight' if BMI is less than 18.5, 'normal weight' if BMI is at least 18.5 but less than 25, 'overweight' if BMI is at least 25 but less than 30 and 'obese' if BMI is 30 or higher. BMI takes no account of body composition (e.g., muscle mass), and is therefore not regarded as a reliable measure of body fat for individuals, but it is regarded as a useful measure for population groups.



which a person is underweight—equal to 18.5 minus BMI if BMI is less than 18.5, and equal to 0 otherwise. The second variable measures the extent to which a person is overweight—equal to BMI minus 25 if BMI is greater than 25, and equal to 0 otherwise. The estimates for the overweight variable indicate that, for both males and females, the more overweight an individual, the lower is general health. However, the estimates for the underweight variable indicate that only for males does being underweight adversely affect health.

Life satisfaction: How is it affected by where you live?

Table 5.5 provides a brief analysis of the effects on life satisfaction of where you live. The table presents panel regression model estimates of the effects on life satisfaction of location of residence and the characteristics of the location of residence. Note that life satisfaction is measured on a 0 (completely dissatisfied) to 10 (completely satisfied) scale.

No significant differences across the states and territories are evident, with the exception that a significant positive effect of living in Queensland is evident for females. Population density, by contrast, is an important factor for both males and females. (See Box 2.7 on page 18 for information on the region variables.) Towns smaller than 1,000 people and non-urban areas increase life satisfaction the most, closely followed by urban areas outside the major cities. Thus, other things being equal, the major cities are the least desirable places to live. This is somewhat counteracted by the effects of socio-economic disadvantage of the area in which an individual lives, since the most advantaged locations tend to be located in the major cities. Moving from the lowest SEIFA decile to the

highest SEIFA decile acts to increase life satisfaction by 0.6 for males and 1.0 for females.

In Waves 1 to 4, 6, 8, 10 and 12, information was collected from each respondent on the characteristics of the neighbourhood in which they live. Respondents were asked to indicate how common each of 10 phenomena are in their neighbourhood, with the response options being ‘never happens’, ‘very rare’, ‘not common’, ‘fairly common’ and ‘very common’. Variables for each of these 10 items are included in the model reported in Table 5.5, where each variable takes an integer value potentially ranging from 0 (never happens) to 4 (very common).

Characteristics of the local neighbourhood appear to be very important factors in life satisfaction, for both males and females. Neighbours helping out and doing things together have large positive effects on life satisfaction, while noise from aeroplanes, trains or industry, homes and gardens in bad condition, people being hostile and aggressive, and burglary and theft all significantly decrease life satisfaction. Loud traffic noise also significantly negatively impacts on females’ life satisfaction. No significant effects are, however, evident for rubbish and litter lying around, teenagers hanging around on the streets, and vandalism and deliberate damage to property.

Table 5.5: Effects of location of residence and neighbourhood attributes on life satisfaction

	Males	Females
<i>State or territory (Reference category: New South Wales)</i>		
Victoria	0.031+	0.026+
Queensland	-0.002+	0.067
Western Australia	-0.039+	-0.008+
South Australia	-0.009+	0.057+
Tasmania	0.086+	0.050+
Northern Territory	0.039+	-0.008+
Australian Capital Territory	0.087+	-0.007+
<i>Region (Reference category: Major urban)</i>		
Other urban	0.077	0.108
Other region	0.108	0.127
SEIFA decile	0.006	0.010
<i>Local neighbourhood traits—How common is...</i>		
Neighbours helping each other out	0.079	0.091
Neighbours doing things together	0.037	0.039
Loud traffic noise	-0.010+	-0.013
Noise from aeroplanes, trains or industry	-0.016	-0.019
Homes and gardens in bad condition	-0.049	-0.052
Rubbish and litter lying around	-0.010+	-0.009+
Teenagers hanging around on the streets	-0.009+	-0.007+
People being hostile and aggressive	-0.071	-0.074
Vandalism and deliberate damage to property	0.003+	0.006+
Burglary and theft	-0.026	-0.039
Number of observations	37,865	40,759
Number of persons	10,517	11,278

Notes: Controls are included for year of interview and age of respondent. Estimates are derived from linear random-effects models estimated on data from Waves 1 to 4, 6, 8, 10 and 12. + indicates estimate is not significantly different from 0 at the 10% level.

6

Cognitive activity and cognitive ability



Skills and abilities are key drivers of individuals' economic and social wellbeing, and it is important to understand their determinants and the mechanisms by which they impact on economic and social outcomes. The HILDA Survey has had a strong focus on skills since its inception, each year collecting detailed information on educational attainment, work experience and—since Wave 5—on-the-job training. Nonetheless, considerable gaps in information on skills and abilities motivated a special focus on 'human capital' in Wave 12, which collected new information on educational attainment, cognitive ability, cognitive activities, computer use and proficiency in languages other than English. In this chapter, a brief analysis of the information collected on cognitive activities and cognitive ability is presented, while in Chapter 7, analysis of the additional education data collected is presented.

Cognitive activities

The self-completion questionnaire administered in Wave 12 contained a question about the frequency respondents engage in eight specific cognitive activities: reading books; reading magazines or newspapers; doing puzzles (like crosswords or Sudoku) or playing word games (such as Scrabble); playing other games, such as board games or computer games; writing (e.g., reports, letters, stories or journal entries); attending educational lectures or courses; engaging in arts or crafts or other artistic activities (e.g., playing musical instruments); and going to museums or art galleries. For each activity, respondents were asked to select from the options: every day or most days; several times a week; about once a week; two or three times a month; about once a month; less than once a month; or not at all.

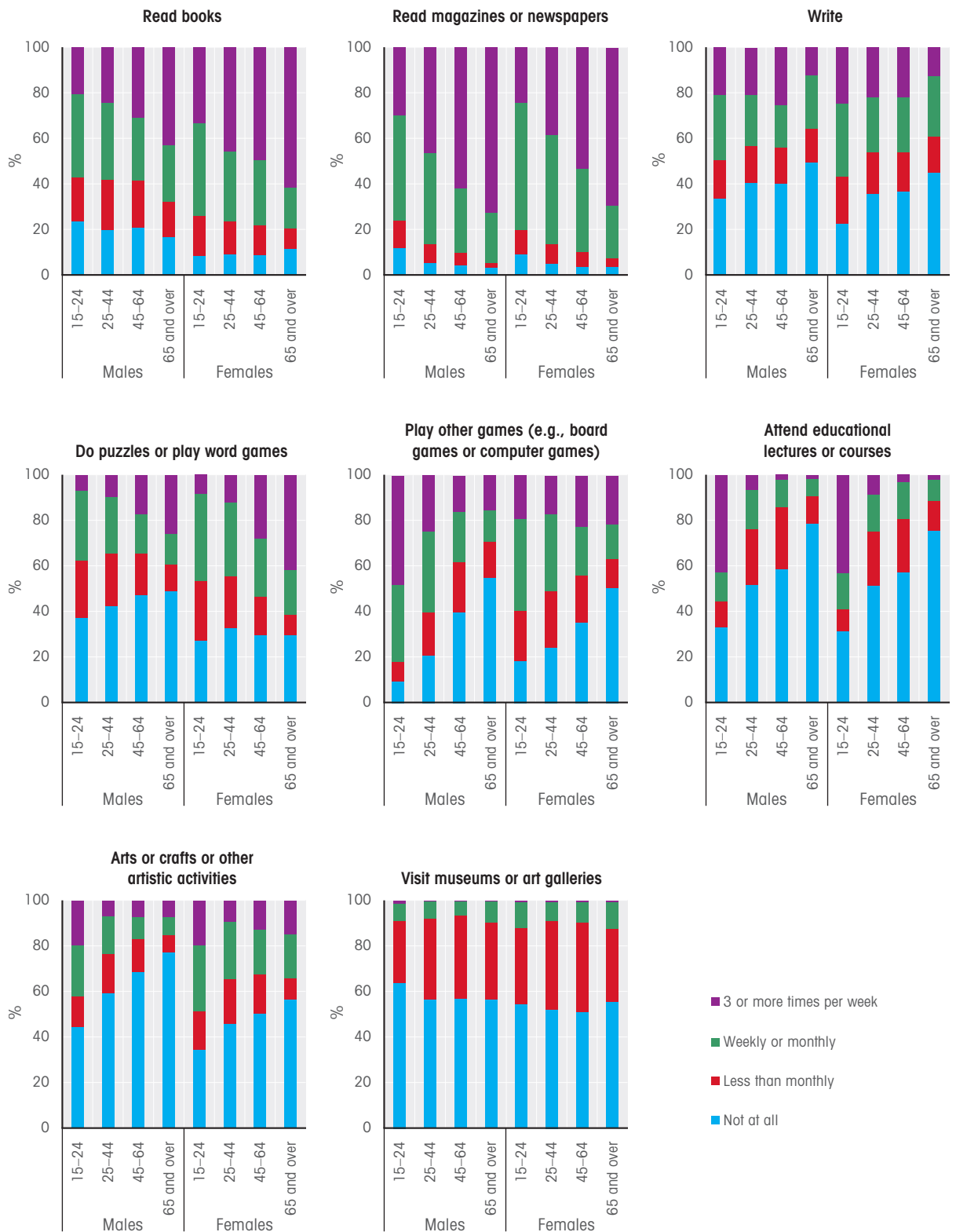
These activities are of course not exhaustive of the range of cognitive activities in which an individual potentially engages. They are weighted towards activities undertaken outside of employment, exclude many computer-related

activities (e.g., programming) and indeed exclude many cognitively demanding hobbies. Nonetheless, they are likely to provide indicative information of the level of cognitive activity of an individual, particularly when examined in conjunction with employment activity.

Figure 6.1 summarises the responses to this question, showing how the frequency of each activity varies by sex and age group. Four levels of frequency are distinguished in the figure: three or more times per week (combining the two highest-frequency categories); weekly or monthly (combining the three middle-frequency categories); less than monthly; and not at all.

Substantial differences are evident across the sex-by-age groups. Frequent reading of books is more common for older age groups, while, within each age group, females are more likely than males to read books frequently. For example, approximately 20% of males aged 15–24 report reading books three or more times per week, compared with 33% of females aged 15–24. At the other end of the age spectrum, 43% of men aged 65 and over, and 61% of

Figure 6.1: Frequency of various cognitive activities, by sex and age group, 2012



women aged 65 and over, report reading books three or more times per week. Reading of newspapers and magazines is even more strongly associated with older age groups, although, for this activity, differences between males and females are quite small.

Females are somewhat more likely than males to write at least monthly, but frequent writing—three or more times per week—is equally common among males and females. For both males and females, the frequency of writing tends to be lower for older age groups, particularly those aged 65 and over: 50% of men and 45% of women aged 65 and over do not write at all.

Playing ‘other games’, which include board games and computer games, is the next most frequent activity. Males aged 15–24 are the most likely to engage in this activity frequently, which probably reflects the popularity of computer games among this demographic group. Nearly 50% of males aged 15–24 engage in this activity three or more times per week, compared with fewer than 20% of females in this age range. Consistent with computer games being the main component of this cognitive activity, people in the older age groups tend to engage in this activity less frequently than those in the younger age groups. Notable, however, is that the proportion of females playing ‘other games’

Box 6.1: What is cognitive ability?

Cognitive ability, or cognitive function, refers to the ability to process thoughts—in simple terms, the ‘ability to think’. Cognitive ability is generally regarded as multidimensional, comprising a number of distinct abilities. More concretely, it is the set of all mental abilities, including attention, memory, judgement and evaluation, reasoning, problem solving, and comprehension. Cognitive ability tests will typically not attempt to measure all dimensions of cognitive ability, although these dimensions are generally found to be positively correlated: people who are highly able in one cognitive skill tend to be more able in other cognitive skills.

three or more times per week is similar across all four age groups examined in Figure 6.1.

Younger people are more likely to attend educational lectures or courses, which is unsurprising given that many young people have yet to complete their education. Perhaps less anticipated is that the likelihood of doing artistic activities decreases with age. Also evident with respect to both educational attendance and artistic activities is that females are more likely to engage in these activities than males.

Cognitive ability

Three cognitive ability tasks were included in the interview component of Wave 12 of the HILDA Survey. The first task, known as ‘Backward Digits Span’ (BDS), is a test of working memory span; the second task, known as ‘Symbol Digits Modalities’ (SDM), is a test of divided attention, visual scanning and motor speed; while the third test is a shortened (25-item) version of the National

Adult Reading Test (NART–25), which provides a measure of pre-morbid intelligence. The BDS and SDM tests can be characterised as providing measures of ‘fluid’ general intelligence—the ability to think logically and solve problems in novel situations, independent of acquired knowledge—while the NART provides a measure of ‘crystallised’ general intelligence—the ability to use skills, knowledge, and experience.¹

Table 6.1 presents summary statistics for the scores on the three cognitive ability measures. The upper panel presents information on the distribution of scores for males and females, while the lower panel presents mean scores by sex and age group. For all three measures, the distributions of scores are very similar for males and females, although females tend to perform slightly better than males on the SDM and NART–25 tests. Comparing across age groups, the mean BDS score peaks in the 30–39 age group and thereafter declines with age. The mean SDM score is even more strongly related to age, tending to be highest for the youngest age groups and thereafter declining with age. The mean NART–25 score, by contrast, is increasing with age up to the 60–69 age group, after which it declines slightly.

The cognitive ability tasks provide objective measures of cognitive ability, but the HILDA Survey also collected subjective measures of ability in Wave 12. Respondents

Box 6.2: Cognitive ability tasks in the HILDA Survey

Backward Digits Span (BDS): The interviewer reads out successively longer strings of single-digit numbers which the respondent is asked to repeat back in reverse order. The string length starts at 2, and with each correct answer it increases by 1, up to a maximum of 8. Respondents are given two chances at each string length, with the task ending if both responses at the same string-length are incorrect. The BDS score ranges from 0 (no correct responses) to 7 (a correct response at all seven string lengths).

Symbol Digits Modalities (SDM): Respondents are given a sheet of paper with a printed key matching symbols to single-digit numbers, below which is a grid of symbols. Each symbol has a blank space next to it, and the respondent is given 90 seconds to enter the corresponding number for as many of the symbols as possible, starting with the symbol in the upper left corner and completing each row in sequence. The SDM score is equal to the number of correct entries.

NART–25: Respondents are asked to pronounce 25 irregularly spelled words printed on a show card. The NART–25 score ranges from 0 (no correct responses) to 25 (all 25 words correctly pronounced).

¹ See Wooden (2013) for an explanation of the cognitive ability tasks administered in the HILDA Survey and for an examination of the quality of the measures of cognitive ability produced by the tasks.

Table 6.1: Cognitive ability task scores, 2012

	<i>Backward digits span</i>		<i>Symbol digits modalities</i>		<i>NART-25</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
Distribution of scores						
Mean	4.9	4.9	47.6	50.3	13.0	13.2
Median	5.0	5.0	48.0	51.0	13.0	13.0
10th percentile	3.0	3.0	31.0	33.0	5.0	5.0
90th percentile	7.0	7.0	63.0	66.0	20.0	20.0
Mean scores by age group						
15–19	4.9	4.9	53.9	56.7	10.4	10.6
20–29	5.0	5.0	53.5	57.4	11.6	11.4
30–39	5.2	5.1	53.0	55.7	12.7	13.3
40–49	5.0	5.0	49.4	52.2	13.6	13.6
50–59	4.8	4.9	45.1	49.0	13.8	14.2
60–69	4.7	4.8	40.6	42.8	14.6	14.7
70–79	4.5	4.5	32.6	35.2	14.5	14.2
80 and over	4.1	4.1	26.3	27.4	13.4	13.5



were asked to rate their own (English) reading and maths skills compared with ‘the average or typical Australian adult’. The rating was on a 0–10 scale, with respondents instructed to interpret a rating of 5 as ‘about average’.²

Table 6.2 presents the mean self-assessed ratings by sex and age group. It is immediately obvious that, on average, people think they are above average. This provides some hint of the problems with subjective measures of ability and hence the motivation for the objective measures introduced in Wave 12. The absence of a strong relationship between rating and age

also perhaps provides an indication of the unreliability of subjective ability measures. Notable is that, on average, females rate their own reading skills more highly than males rate their own reading skills, while males rate their own maths skills more highly than females rate their own maths skills.

Correlations between the five measures of cognitive ability are examined in Table 6.3. All correlation coefficients are positive, including for the subjective measures, which perhaps to some extent validates them as ability measures. Indeed, for both males and females, the highest correlation coefficient for the NART–25 is with self-assessed reading skills. That said, none of the measures are even close to being perfectly correlated, although this is consistent with each measure containing distinct information about the ability of the individual. Comparing males and females, it is interesting that all correlation coefficients are somewhat higher for males, meaning that there is a greater tendency for a male with a high score on one measure to also score highly on the other measures.

Table 6.2: Mean self-assessed reading skills and maths skills, by sex and age group (0–10 scale), 2012

	<i>Self-assessed reading skills</i>		<i>Self-assessed maths skills</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
15–19	7.7	8.1	7.2	6.8
20–29	7.7	8.0	7.2	6.6
30–39	7.7	8.2	7.3	6.7
40–49	7.7	8.3	7.4	6.8
50–59	7.6	8.2	7.3	6.9
60–69	7.6	7.9	7.3	6.6
70–79	7.7	7.9	7.2	6.5
80 and over	7.5	7.8	7.0	6.5

² Self-assessed reading and maths skills were obtained from respondents prior to undertaking the cognitive ability tasks, reducing the potential for assessments to be affected by perceived performance on the tasks.

Table 6.3: Correlations between measures of cognitive ability, 2012

	<i>Backward digits span</i>	<i>Symbol digits modalities</i>	<i>NART–25</i>	<i>Self-assessed reading skills</i>	<i>Self-assessed maths skills</i>
Males					
Backward digits span	1.000	–	–	–	–
Symbol digits modalities	0.375	1.000	–	–	–
NART–25	0.373	0.223	1.000	–	–
Self-assessed reading skills	0.259	0.210	0.497	1.000	–
Self-assessed maths skills	0.274	0.265	0.273	0.529	1.000
Females					
Backward digits span	1.000	–	–	–	–
Symbol digits modalities	0.344	1.000	–	–	–
NART–25	0.356	0.189	1.000	–	–
Self-assessed reading skills	0.225	0.182	0.478	1.000	–
Self-assessed maths skills	0.238	0.216	0.175	0.453	1.000

Associations between characteristics and cognitive ability

In Table 6.4, the associations between cognitive ability test scores and characteristics are explored. The table presents coefficient estimates from ordinary least squares models for each test. The models contain variables for age, self-assessed English language proficiency of non-native speakers, educational attainment, cognitive activities (as presented in Figure 6.1), disability, labour force status and occupation, computer use and, for persons aged 65 and over, participation in employment, child-minding, voluntary work and regular exercise. The sample is restricted to people aged 25 and over, since many people under 25 have yet to leave full-time education (for the first time).

The models also contain controls for ‘achievement motivation’—fear of failure and hope for success—on the basis that they will impact on the degree of effort exerted in the tests. The two measures are derived from the respondent’s attitudes to new or difficult tasks and situations (see Box 6.3, at right).

Significant differences between men and women are evident for all three cognitive ability tests. Holding other factors constant, men on average score more highly than women on the BDS and NART–25 tests, while women score more highly on the SDM test. The lower mean score for women for the NART–25 is at odds with the higher subjectively assessed reading ability of women, and is perhaps surprising. However, it is important to note that interviewers are required to assess whether the respondent has pronounced each word correctly, and this may bias the results. It is also possible that women are less likely than men to attempt to pronounce unfamiliar words.

In line with the simple cross-tabulations presented in Table 6.1, age is an important determinant of score for the SDM and NART–25 tests, but is not a significant factor for the BDS test until the post-65 age ranges are reached. For the SDM test, the score decreases with age from the 30–34 age range onwards. This is consistent with the SDM providing a measure of ‘fluid intelligence’ which peaks in the early 30s and thereafter declines. For the NART–25 test, the score increases with age across the entire age range, so that people in the 85 and over age group have the highest expected score, all else equal. This is consistent with the NART–25 providing a measure of ‘crystallised

Box 6.3: Measures of ‘achievement motivation’

To measure achievement motivation, respondents were asked to indicate the extent to which they agreed with each of the following statements:

1. *In difficult situations where a lot depends on me, I am afraid of failing*
2. *I like situations where I can find out how capable I am*
3. *I feel uneasy about undertaking a task if I am unsure of succeeding*
4. *When confronted by a difficult problem, I prefer to start working on it straight away*
5. *I am afraid of tasks that I cannot work out or solve*
6. *I enjoy situations that make use of my abilities*
7. *Even when nobody is watching, I feel anxious in new situations*
8. *I am attracted to tasks that allow me to test my abilities*
9. *I start feeling anxious if I do not understand a problem immediately*

Responses were on a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). The fear of failure measure is equal to the sum of the individual’s responses to items 1, 3, 5, 7 and 9, while the hope for success measure is equal to the sum of the individual’s responses to items 2, 4, 6 and 8. Scores for the fear of failure measure range from 5 to 35 (with a sample mean of 18.2) and scores for the hope for success measure range from 4 to 28 (with a sample mean of 21.1).

Table 6.4: Factors associated with scores on cognitive ability tasks—Persons aged 25 and over, 2012

	<i>Backward digits span</i>	<i>Symbol digits modalities</i>	<i>NART-25</i>
Male	0.114	-2.241	0.561
<i>Age group (Reference category: 25–29)</i>			
30–34	0.057+	0.058+	0.647
35–39	0.040+	-1.712	1.550
40–44	-0.039+	-2.565	1.553
45–49	-0.026+	-4.964	2.282
50–54	-0.116+	-5.950	2.275
55–59	-0.177	-7.497	2.577
60–64	-0.006+	-9.138	3.384
65–69	-0.224	-12.494	3.418
70–74	-0.223	-15.942	3.422
75–79	-0.261	-18.525	3.900
80–84	-0.479	-21.032	3.824
85 and over	-0.482	-23.979	4.042
<i>Educational attainment (Reference category: Less than high-school completion)</i>			
Degree or higher	0.513	3.551	3.139
Diploma	0.219	2.288	1.796
Certificate Level 3 or 4	0.005+	0.464+	0.654
Completed high school	0.256	2.164	2.085
<i>Labour force status and occupation group (Reference category: Not in the labour force)</i>			
Unemployed	-0.044+	-2.145+	-1.007
Managers	0.216	3.117	0.517
Professionals	0.229	3.116	1.168
Technicians and trades workers	-0.054+	1.847	-0.184+
Community and personal service workers	-0.024+	1.051	-0.372+
Clerical and administrative workers	0.306	3.869	0.948
Sales workers	0.151	2.063	0.040+
Machinery operators and drivers	0.096+	1.169	-0.812
Labourers	-0.078+	0.214+	-0.801
Use a computer in day-to-day activities	0.303	3.966	1.880
<i>Frequency of cognitive activities (1–4 scale)</i>			
Read books	0.072	0.456	0.694
Read magazines or newspapers	-0.043	-0.358	0.007+
Do puzzles or play word games	0.127	1.118	0.530
Play other games	0.028	0.478	-0.156
Write	0.008+	0.264	0.310
Attend educational lectures or courses	-0.032+	-0.154+	-0.147
Artistic activities	0.035	0.362	0.213
Visit museums or art galleries	-0.017+	-0.586	0.602
Aged 65 and over: In paid employment	-0.071+	-1.571	-0.039+
Aged 65 and over: Look after others' children	0.166	0.438+	0.170+
Aged 65 and over: Do voluntary work	0.081+	1.317	0.733
Aged 65 and over: Exercise regularly	0.035+	1.206	-0.002+
<i>Disability (Reference category: No moderate or severe disability)</i>			
Disability with moderate work restriction	-0.014+	-1.645	-0.136+
Disability with severe work restriction	-0.237	-4.704	-1.018
<i>English proficiency (Reference category: Native English speaker, or English good or better)</i>			
Poor English	-0.771	-3.767	-9.311
Okay English	-0.590	-4.418	-6.285
Hope for success	0.008	0.026+	-0.016+
Fear of failure	-0.004+	-0.058	-0.008+
Constant	2.933	46.403	4.475
Number of persons	10,809	10,796	10,789

Notes: Table presents coefficient estimates from ordinary least squares regression models. + indicates estimate is not significantly different from 0 at the 10% level.



intelligence'. Nonetheless, it is notable that, on average, there is no evidence of cognitive decline in the older ages for this dimension of crystallised intelligence.

Scores on the BDS test do not significantly differ by age among those aged 25–64, but thereafter decline with age, consistent with this being the age range when 'working memory' declines.

Unsurprisingly, university-level educational qualifications are associated with higher test scores (see Box 7.1 on page 68 for information on the classification of educational attainment). High-school completion (with no post-school qualifications at Certificate Level 3 or above) is also associated with relatively high scores: holding other factors constant, those who have completed high school have similar scores to those holding diplomas, and higher scores than those in the Certificate Level 3 or 4 category. Indeed, all else

constant, holders of Level 3 or 4 Certificates do not score any better in the BDS and SDM tests than those in the 'less than high-school completion category'.

All else equal, unemployed people do not score significantly lower than other people on the BDS and SDM tests, but they do score lower on the NART–25 test. Among employed people, managers and professionals score more highly on all three tests. Clerical and administrative workers, and sales workers, also score relatively highly on the BDS and SDM tests, while technicians and trades workers, and community and personal service workers, score relatively highly on the SDM test, but not on the other two tests.

The estimates indicate that a number of cognitive activities are associated with higher measured cognitive ability. Holding other factors constant, regular use of a computer in day-to-day activities is

associated with higher test scores, while there is a positive association between all three test scores and frequency of reading books, doing puzzles or word games and engaging in artistic activities. Greater frequency of writing is associated with higher scores for the SDM and—unsurprisingly—the NART–25, but has no significant association with score on the BDS test. Playing 'other' games (including computer games) is associated with higher scores on the BDS and SDM tests, but lower scores on the NART–25. Attendance at lectures or courses is likewise associated with lower NART–25 scores, but has no significant relationship with BDS and SDM scores. Visiting museums and galleries is associated with higher NART–25 scores, but lower scores on the SDM test. Curiously, reading of newspapers and magazines is associated with lower performance on the BDS and SDM tests, and no effect on performance on the NART–25 test.

The additional variables included for people aged 65 and over explore the potential for various activities (additional to the above cognitive activities) to protect against cognitive decline. There is some evidence supporting such an effect for voluntary work, looking after children and regular exercise, although none of these activities is positively associated with all three cognitive measures. Looking after children is associated with a positive impact on the BDS score, voluntary work is associated with a positive impact on SDM and NART–25 scores, and regular exercise (three or more times per week) is associated with a positive impact on the SDM score. Of course, it must be acknowledged that cognitive decline could affect participation in these activities, rather than the activities slowing decline. Surprisingly, no positive effects are found for employment, and indeed there is a negative association between employment and the SDM score.

The variables for English language proficiency, disability and achievement motivation are included primarily to serve as ‘controls’ so as to accurately ascertain the associations between other characteristics and cognitive ability. Achievement motivation turns out to have little apparent effect on the scores achieved. It might be expected that people with greater hope for success and/or fear of failure would, all else equal, perform better on the tests, if the tests did in fact capture effort exerted in carrying out the cognitive ability tasks. However, hope for success only has a significant positive impact for the BDS test, while the only significant effect of fear of failure is in the opposite direction, with greater fear of failure associated with a lower score on the SDM test.

As expected given the nature of the tasks, which are administered in English, non-native-English speakers who are not completely proficient in English on average score considerably lower. Disability that moderately restricts the ability to work does not significantly affect performance, but severely restricting disability is associated with lower scores. This is likely to at least in part reflect the effects of impairments on the ability to actually carry out the tasks.



Table 6.5: Partner and parent–child correlations in scores on cognitive ability tasks, 2012

	<i>Backward digits span</i>	<i>Symbol digits modalities</i>	<i>NART–25</i>
Scores of partners	0.203	0.436	0.550
Age-adjusted scores of parents and children			
Mother and son	0.230	0.252	0.413
Father and son	0.261	0.275	0.458
Mother and daughter	0.221	0.289	0.440
Father and daughter	0.270	0.210	0.427

Notes: The mean age of the children in the parent–child comparisons is 23 (with a minimum of 15). The mean age of the mothers is 52 (with a minimum of 32 and maximum of 91) and the mean age of the fathers is 54 (with a minimum of 33 and maximum of 90).

Partner and parent–child correlations in cognitive ability scores

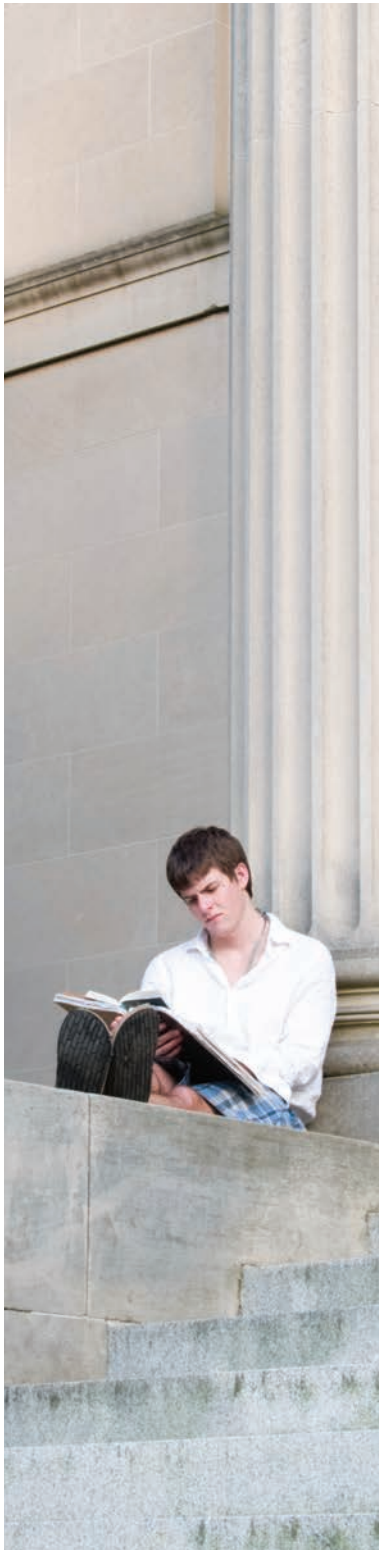
Within-family correlations in cognitive ability scores are examined in Table 6.5. The table shows the correlation coefficients for partners’ test scores and for parent–child test scores. Consistent with the notion of ‘assortative mating’, the partner correlation coefficients are all positive, ranging from 0.2 for the BDS test to 0.55 for the NART–25 test. If partnering was essentially random with respect to cognitive ability, we would expect a correlation coefficient of 0, while

a tendency for high-ability people to partner with low-ability people would result in a negative correlation coefficient. Note that the positive correlation coefficients for the SDM and NART–25 are likely to derive in part from their associations with age and the fact that partners tend to be of similar ages. Nonetheless, the HILDA Survey data show a tendency for people to partner with people of similar cognitive ability.

The lower panel of Table 6.5 presents parent–child correlation coefficients, separately examining mother–son, father–son, mother–daughter and father–daughter correlations. To attempt to control for the effects of age differences between parents and children, the correlation coefficients are calculated for ‘age-adjusted’ scores, obtained by calculating the deviation of an individual’s score from the score predicted for their age group (based on the estimates presented in Table 6.4). Parent–child correlation coefficients are all positive. They are higher than the partner correlation coefficient for the BDS test, but—despite controlling for age effects—lower for the SDM and NART–25 tests. Nonetheless, the parent–child correlation coefficients are higher for NART–25 than the other two measures, suggesting that parents have a greater influence on their children’s vocabulary than on the cognitive abilities measured by the BDS and SDM.

7

Education and labour market outcomes



While the educational attainment of respondents has been collected by the HILDA Survey since its inception, in Wave 12 some additional information was collected. People with post-school qualifications were asked about the type of educational institution they attended, their main field of study and, for those with university qualifications, the name of the institution they attended. As reported in Chapter 2, additional information was also collected on school education of those still in school. This chapter provides a brief statistical overview of the information on educational qualifications collected in Wave 12, followed by an exploration of the relationship between the educational qualifications of individuals and their labour market outcomes. In addition, new information on individuals' use of computers and its implications for earnings is briefly examined. For all of the analysis presented in this chapter, adults aged 25 and over are examined on the basis that most people have completed formal education by the age of 25 (although it should be acknowledged that many people undertake further education after the age of 25).

Educational qualifications of Australians

Table 7.1 shows the educational attainment of the population aged 25 and over, disaggregated by sex and age group. In 2012, the highest qualification was a master's degree or doctorate for 7.1% of men and 5.3% of women, a graduate diploma or graduate certificate for 5.4% of men and 6.4% of women, a bachelor's degree for 15.6% of men and 17.3% of women, a diploma or advanced diploma for 9.3% of men and 10.8% of women, a Certificate Level 3 or 4 for 28.9% of men and 15.8% of women, Year 12 completion for 11.4% of men and 12.6% of women, and less than Year 12 for 21.9% of men and 31.4% of women.

There are substantial differences evident in the educational attainment profile by age. Each successively older age group has a smaller proportion with university-level qualifications (bachelor's

degree, graduate diploma, graduate certificate, master's degree or doctorate), and a higher proportion with a highest qualification of Year 11 or lower. For example, the proportion of men with university qualifications in 2012 is 38.6% in the 25–34 age group, 32.3% in the 35–44 age group, 27.1% in the 45–54 age group, 24.9% in the 55–64 age group and 15.2% in the 65 and over age group; while the proportion of men with a highest qualification of Year 11 or less is 12.8% in the 25–34 age group, 13.7% in the 35–44 age group, 21.5% in the 45–54 age group, 26.1% in the 55–64 age group and 38.3% in the 65 and over age group. The differences by age group are even larger for women, reflecting a societal shift over time towards greater education participation by women. For example, in 2012, 62.8% of women aged 65 and over had a highest qualification of Year 11 or lower, compared with only 9.5% of women aged 25–34. We thus see that women in the 55 and over age groups are on average less

educated than men in these age groups, while women in the 25–34 and 35–44 age groups are on average more educated than similarly-aged men.

Table 7.2 summarises the information collected on institution of highest qualification that was obtained in Wave 12 for all respondents holding a university qualification. It presents, by sex and age group, the proportion who obtained their highest qualification from each of six groups of universities (described in Box 7.2, page 69). The table shows that, of the 28.1% of men and 29% of women aged 25 and over holding a university qualification in 2012, 27.7% of men and 23.8% of women obtained their highest qualification from a 'Group of 8' (Go8) university. Significantly, overseas universities are an important source of qualifications for people living in Australia, representing the second-most common source of highest qualification for men and the third-most common source for women.

Box 7.1: Classification of educational attainment and field of study

The classification of educational qualifications adopted by the HILDA Survey is based on the Australian Standard Classification of Education (ASCED) (Australian Bureau of Statistics (ABS), 2001), which classifies formal educational qualifications by level and by field of study.

The level of highest educational attainment is derived from information on highest year of school completed and level of highest non-school qualification. In this report (e.g., Table 7.1), up to seven levels of attainment are distinguished, ranging from 'Masters or Doctorate' down to 'Year 11 and below'. Note in particular that, as explained in ABS (2014), Year 12 is defined to be a higher qualification than a Certificate Level 1 or 2, so that the category 'Year 11 and below' includes people who hold a Certificate Level 1 or 2.

ASCED classifies field of study into 12 broad groups which form the basis for the HILDA Survey classification of *main* field of study. The HILDA Survey classification of field of study nonetheless deviates from the ASCED broad groupings in three ways: (1) medicine and nursing are each distinguished from other 'health-related' fields; (2) law is distinguished from other 'society and culture' fields; and (3) the 'mixed fields' category is removed (i.e., respondents are required to identify a single main field).

Consistent with their more recent establishment, the non-Go8 Australian universities represent a higher proportion of qualifications in the younger age groups. For men with university qualifications, 22.5% of those in the 25–34 age group obtained their highest qualification from a Go8 university, compared with 45.0% of those in the 65 and over age group. Similarly, 20.5% of women aged 25–34 with university qualifications obtained their highest qualification from a Go8 university,

compared with 35.6% of university-qualified women age 65 and over.

Field of study of highest qualification is examined in Table 7.3 for all respondents aged 25 and over with non-school qualifications (including Certificate Levels 1 and 2). For men, the most common field is engineering and related, followed by management and commerce and then architecture and building. For women, the most common field is management and commerce,

Table 7.1: Educational attainment by sex and age group, 2012 (%)

	25–34	35–44	45–54	55–64	65 and over	All aged 25 and over
Males						
Master's degree or doctorate	9.4	8.4	6.5	6.5	4.1	7.1
Graduate diploma or certificate	4.9	6.5	5.3	6.5	4.0	5.4
Bachelor's degree	24.3	17.4	15.3	11.9	7.1	15.6
Diploma or advanced diploma	5.7	9.9	11.0	10.8	9.9	9.3
Certificate Level 3 or 4	23.7	31.5	32.2	28.9	28.3	28.9
Year 12	19.2	12.6	8.1	8.9	6.8	11.4
Year 11 and below	12.8	13.7	21.5	26.1	38.3	21.9
Undetermined	*0.1	*0.0	*0.1	*0.4	1.6	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Females						
Master's degree or doctorate	9.0	6.6	5.2	3.5	1.6	5.3
Graduate diploma or certificate	5.1	7.6	8.7	7.2	3.5	6.4
Bachelor's degree	29.9	23.0	14.4	10.4	7.4	17.3
Diploma or advanced diploma	12.1	13.8	10.6	10.0	7.4	10.8
Certificate Level 3 or 4	17.6	15.5	19.7	17.6	8.9	15.8
Year 12	16.8	14.5	12.2	11.0	8.1	12.6
Year 11 and below	9.5	18.9	29.2	38.7	62.8	31.4
Undetermined	*0.0	*0.1	*0.0	1.5	*0.3	0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: * Estimate not reliable.



followed by education, nursing, and society and culture. The fields of study differ substantially across the age groups examined in the table, with younger age groups more likely to have studied management and commerce, information technology, food, hospitality and personal services, creative arts and law, and less likely to have studied agriculture, environment and related studies, and education. Men in the younger age groups are also less likely to have studied engineering and related technologies, and society and cultures; while women in younger age groups are also more likely to have studied natural and physical sciences, engineering and related technologies, agriculture,

Box 7.2: University groupings

In total, there are 39 Australian universities. There are several ways in which these universities could be classified into groups, but in this report we classify universities according to the four main formal groupings:

The **Group of 8 (Go8)** markets itself as the group of 'Australia's Leading Universities', comprising The University of Adelaide, The Australian National University, The University of Melbourne, Monash University, The University of New South Wales, The University of Queensland, The University of Sydney and The University of Western Australia.

The **Australian Technology Network (ATN)** is a coalition of five Australian universities (Curtin University of Technology, University of South Australia, RMIT University, University of Technology Sydney and Queensland University of Technology) that share a common focus on the practical application of tertiary studies and research.

Innovative Research Universities (IRU), is a group of seven universities (Flinders University, Griffith University, La Trobe University, Murdoch University, University of Newcastle, James Cook University and Charles Darwin University) that 'share a common mode of operation ... and a common background, having been founded in the 1960s and 1970s as research universities'.

The **Regional Universities Network (RUN)** comprises six universities (Central Queensland University, Southern Cross University, University of Ballarat, University of New England, University of Southern Queensland and University of the Sunshine Coast), it was formed in 2011 to take advantage of the regional focus of the Gillard Labor Government.

The remaining 13 universities are classified as 'other Australian' universities. (A further three foreign universities have, or have had, campuses in Australia taking Australian students. However, none of the HILDA Survey respondents reported obtaining their highest qualification from one of these universities.)

Table 7.2: University grouping of highest educational qualification, by sex and age group—Persons with university qualifications, 2012 (%)

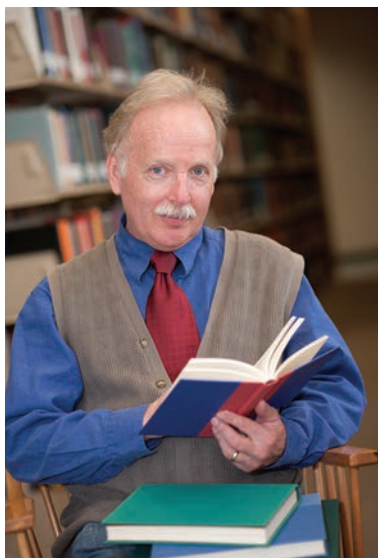
	25–34	35–44	45–54	55–64	65 and over	All aged 25 and over
Males						
Group of 8 (Go8)	22.5	23.3	25.1	35.9	45.0	27.7
Australian Technology Network (ATN)	13.4	18.2	12.2	11.4	*5.7	13.1
Innovation Research Universities (IRU)	8.1	9.5	7.2	7.8	*5.8	7.9
Regional Universities Network (RUN)	12.9	5.3	7.8	*5.5	*3.5	7.9
Other Australian university	21.4	21.4	20.3	16.9	11.6	19.4
Overseas university	21.8	22.3	27.4	22.5	28.4	23.9
Total	100.0	100.0	100.0	100.0	100.0	100.0
Females						
Group of 8 (Go8)	20.5	25.5	21.9	24.0	35.6	23.8
Australian Technology Network (ATN)	17.1	15.1	10.4	15.9	10.0	14.6
Innovation Research Universities (IRU)	12.8	12.2	12.5	9.9	8.6	11.9
Regional Universities Network (RUN)	4.8	4.9	7.8	9.8	*4.8	6.0
Other Australian university	25.0	23.6	29.7	24.6	19.5	25.0
Overseas university	19.9	18.7	17.7	15.8	21.5	18.8
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: * Estimate not reliable.

environment and related studies, medicine and law, and are considerably less likely to have studied nursing and education than older women with non-school qualifications.

Education and labour market outcomes

Economists have long been interested in the labour market benefits of education, and there has correspondingly been a great deal of research attempting to quantify these benefits (see, for example, Ashenfelter et al., 1999; and Card, 1999). Irrefutable evidence on the benefits of education has, however, proved somewhat elusive, reflecting the fundamental ‘identification’ problem that we do not observe what an educated person would have experienced had they not obtained their education.¹ In this report we



do not attempt to estimate the ‘returns’ to education, but rather simply describe the empirical association between education and labour market outcomes.

Table 7.4 presents regression results from models of the effects associated with level of educational attainment and university grouping on three outcomes: the probability

of employment; the probability of full-time employment; and weekly earnings. The models are estimated separately for men and women, and restricted to persons aged 25–59. The earnings models are further restricted to full-time employees. All models include controls for ‘confounding factors’, comprising variables for age, place of birth and Indigenous status, state of residence, population density of region of residence, disability and English language proficiency. The employment models additionally include controls for family type and the age of the youngest child. The table also presents estimates with the addition of controls for cognitive ability, as measured by the scores on the three cognitive ability tests described in Chapter 6. The addition of these controls arguably provides a stronger basis for interpreting estimates for education variables as ‘causal’, on the grounds that this controls for the higher innate ability of the more-educated

¹ As with many economic and social phenomena, the problem of identification of the causal effects of education is not easily overcome. For example, ‘double-blind’ randomised controlled trials, the gold standard for evaluation of treatment effects in medical research, are not viable for a ‘treatment’ such as education.

Table 7.3: Main field of study of persons with non-school qualifications, 2012 (%)

	25–34	35–44	45–54	55–64	65 and over	All aged 25 and over
Males						
Natural and physical sciences	2.6	4.3	4.3	3.4	4.3	3.7
Information technology	8.8	5.6	5.3	4.6	*2.3	5.7
Engineering and related technologies	22.1	26.2	30.9	31.4	34.3	28.2
Architecture and building	10.0	8.1	10.8	10.6	9.7	9.8
Agriculture, environment and related	3.4	4.0	4.7	4.6	5.2	4.3
Medicine	*1.4	*1.7	*1.3	*0.8	2.5	1.5
Nursing	*1.3	*1.9	*1.7	*1.3	*0.1	1.3
Other health-related	3.1	2.8	3.3	*1.4	*2.4	2.7
Education	3.0	3.7	6.3	8.7	7.5	5.4
Management and commerce	26.0	22.9	16.7	17.4	17.1	20.6
Law	3.6	3.2	1.6	*2.0	*1.7	2.5
Society and culture	4.7	5.7	5.8	8.6	8.0	6.3
Creative arts	4.0	3.0	2.6	*1.8	*2.0	2.8
Food, hospitality and personal services	5.7	6.2	4.7	3.4	2.9	4.8
Other	*0.5	*0.8	*0.1	*0.0	*0.2	*0.4
Total	100.0	100.0	100.0	100.0	100.0	100.0
Females						
Natural and physical sciences	4.5	3.6	2.2	*1.3	*2.4	3.0
Information technology	5.2	*1.9	2.2	*2.1	*1.8	2.8
Engineering and related technologies	3.4	*1.6	*1.2	*1.1	*1.3	1.9
Architecture and building	*1.2	*0.8	*0.9	*1.2	*0.5	0.9
Agriculture, environment and related	*1.7	*1.9	*0.8	*0.8	*0.4	1.3
Medicine	*1.5	*1.8	*1.2	*0.9	*1.2	1.4
Nursing	8.2	8.3	15.6	18.3	19.9	12.8
Other health-related	7.5	7.9	8.9	6.4	5.7	7.5
Education	11.3	15.8	20.1	20.7	19.0	16.7
Management and commerce	26.0	26.5	22.8	23.2	23.1	24.6
Law	2.1	2.3	*1.4	*0.6	*0.7	1.6
Society and culture	12.5	11.8	11.7	14.0	12.6	12.4
Creative arts	7.1	5.8	3.6	*3.2	5.4	5.2
Food, hospitality and personal services	7.9	10.1	7.3	5.3	5.9	7.7
Other	*0.1	*0.1	*0.2	*0.8	*0.4	*0.3
Total	100.0	100.0	100.0	100.0	100.0	100.0

Note: * Estimate not reliable.

that would suggest they would have better labour market outcomes even without the additional education. Nonetheless, the estimates should at best be regarded as tentative evidence of the causal effects of education.

The estimates indicate that education has little effect on employment participation of men, be it in any (part-time or full-time) job. For women, by contrast,

employment participation—especially full-time employment participation—does appear to be significantly higher for the more highly educated. In particular, a diploma or higher educational qualification is associated with an approximate 10 percentage points or greater increase in the probability of full-time employment compared with maximum educational attainment

of Year 11 and below. For neither men nor women is there a significant association between university grouping and employment participation.

Earnings of full-time employees are clearly more strongly related to level of educational attainment and university type. For example, based on the estimates in the lower panel of Table 7.4, compared with attainment of Year 11 and below, a

Table 7.4: Effects of education on employment and earnings, 2012

	<i>Employed</i>		<i>Employed full-time</i>		<i>Log weekly earnings of full-time employees</i>	
	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>	<i>Males</i>	<i>Females</i>
Base models						
<i>Educational attainment (Reference category: Year 11 and below)</i>						
Master's degree or doctorate	0.068	0.100+	0.120+	0.156	0.521	0.446
Graduate diploma or certificate	0.011+	0.130	0.061+	0.122	0.492	0.367
Bachelor's degree	0.019+	0.134	0.040+	0.107	0.454	0.335
Diploma or advanced diploma	0.022+	0.082	0.064	0.115	0.316	0.103
Certificate Level 3 or 4	0.032	0.119	0.057	0.045	0.202	0.014+
Year 12	0.008+	0.075	0.015+	0.054	0.217	0.159
<i>Type of university (Reference category: Group of 8 (Go8))</i>						
Australian Technology Network (ATN)	-0.012+	0.074	-0.009+	0.053+	0.109	0.122
Innovation Research Universities (IRU)	0.073	0.084	0.043+	0.058+	0.147	0.155
Regional Universities Network (RUN)	0.042+	0.062+	0.014+	0.027+	0.025+	0.019+
Other Australian university	0.011+	0.026+	0.015+	0.048+	-0.192	0.143
Overseas university	0.080	0.101	0.067	0.090	-0.012+	0.043+
Controlling for cognitive ability						
<i>Educational attainment (Reference category: Year 11 and below)</i>						
Master's degree or doctorate	0.053	0.080+	0.112	0.145	0.471	0.421
Graduate diploma or certificate	-0.001+	0.107	0.056+	0.113	0.445	0.348
Bachelor's degree	0.009+	0.111	0.034+	0.094	0.407	0.319
Diploma or advanced diploma	0.015+	0.065	0.061	0.104	0.289	0.084
Certificate Level 3 or 4	0.030	0.109	0.057	0.040	0.193	0.009+
Year 12	0.002+	0.064	0.013+	0.047	0.186	0.145
<i>Type of university (Reference category: Group of 8 (Go8))</i>						
Australian Technology Network (ATN)	-0.018+	0.054+	-0.008+	0.036+	0.103	0.094
Innovation Research Universities (IRU)	0.077	0.070	0.048+	0.049+	0.146	0.132
Regional Universities Network (RUN)	0.040+	0.054+	0.019+	0.020+	0.021+	0.006+
Other Australian university	0.015+	0.017+	0.017+	0.041+	-0.186	0.129
Overseas university	0.079	0.092	0.071	0.082	-0.014+	0.025+
BDS score	-0.003+	0.015	0.003+	0.015	0.026	0.014
SDM score	0.002	0.002	0.002	0.002	0.001+	0.000+
NART-25 score	0.001+	0.003+	-0.002+	0.001+	0.004	0.007
Did not do 1 or more of BDS, SDM and NART-25	0.061	0.097	0.030+	0.122	0.094	0.093+
Constant	-	-	-	-	6.640	6.568
Number of persons	4,673	5,154	4,673	5,154	3,031	1,899

Notes: The employment models are estimated by Probit regressions and reported estimates are mean marginal effects. The earnings model is estimated by ordinary least squares regression and the estimates are the regression coefficients. The sample for the employment models is all persons aged 25–59. The sample for the earnings model is full-time employees aged 25–59. All models contain controls for age, place of birth and Indigenous status, state of residence, population density of region of residence, disability and English proficiency. The two employment models additionally contain controls for family type and age of youngest dependent child. + indicates estimate is not significantly different from 0 at the 10% level.



master's degree or doctorate increases earnings by 47.1% for men and 42.1% for women, a graduate diploma or certificate increases earnings by 44.5% for men and 34.8% for women, a bachelor's degree increases earnings by 40.7% for men and 31.9% for women, and a diploma or advanced diploma increases earnings by 28.9% for men and 8.4% for women. A Certificate Level 3 or 4 is also associated with a 19.3% increase in earnings for men, but no significant increase in earnings for women, while completion of high school is associated with an 18.6% increase in earnings for men and a 14.5% increase in earnings for women.

The estimates also suggest there is an earnings premium attached to Australian Technology Network (ATN) and Innovation Research University (IRU) universities. For example, the estimates from the models which control for cognitive ability show that, for both men and women, there is an approximate 10% premium to obtaining the highest qualification from an ATN university as opposed to a Go8 university, and an approximate 15% premium to obtaining the highest qualification from an IRU university



as opposed to a Go8 university. No significant earnings differences are evident between Go8, Regional Universities Network (RUN) and overseas universities for men or women, but relative to the 'other' Australian universities, all three of these groups have an earnings premium of approximately 20% for men, and an earnings *penalty* of approximately 13% for women.²

It is perhaps surprising that graduates of the Go8 universities do not have the highest (conditional) earnings, and indeed have significantly lower earnings than ATN, IRU and, for women, RUN universities. This may in part reflect differences in the field of study composition of graduates, with perhaps a greater focus on vocational fields in the ATN and IRU universities. It should also be noted that the earnings regressions restrict to full-time employees, and it may be, for example, that graduates of Go8 universities are more likely to become (high-earning) self-employed or employers.

Box 7.3: HILDA Survey measure of computer skills

To measure computer skills, respondents were asked to indicate the extent to which they agreed with each of the following statements:

1. *My level of computer skills meets my present needs*
2. *I feel comfortable installing or upgrading computer software*
3. *Computers have made it possible for me to get more done in less time*
4. *Computers have made it easier for me to get useful information*
5. *Computers have helped me learn new skills other than computer skills*
6. *Computers have helped me communicate with people*
7. *Computers have helped me reach my occupational (career) goals*

Responses were on a 7-point Likert scale, ranging from strongly disagree (1) to strongly agree (7). The measure used in this report is simply the sum of the responses to each statement, and therefore has a potential range from 7 to 49. This is, of course, far from a perfect measure of computer skills, in part because several of the above statements relate to the *usefulness* of computers to the respondent rather than the capacity of the respondent to use computers. Nonetheless, it seems highly likely that people who find computers more useful tend to have higher computer skills.

Computer use

As part of the 'human capital' focus, a limited amount of information was collected on computer use and computer skills in Wave 12. Computer use was assessed using a simple 'yes-no' question on whether the respondent

² In further analysis not presented in this report, earnings models that include a separate dummy variable for each Australian university were estimated. These models showed that the specific universities with the highest graduate earnings (controlling for other factors) are: Australian Catholic University; Charles Darwin University; Curtin University of Technology; Murdoch University; Queensland University of Technology; The University of New South Wales; The University of Newcastle; The University of Sydney; and The University of Western Australia.



uses a computer to assist in day-to-day activities, while skills were measured by ascertaining the extent of agreement with each of seven statements related to competency using computers and the benefits derived from using them (see Box 7.3, page 73).

In Table 7.5, differences in computer use and computer skills by sex, age and educational attainment are explored using regression methods. Model A presents mean marginal effects estimates from a Probit model of the effects of sex, age and educational attainment on the probability an individual uses a computer to assist in day-to-day activities. Model B presents ordinary least squares coefficient estimates of the effects of these same characteristics on our measure of computer skills.

Model A shows that, holding constant age and education, men are less likely than women to use a computer to assist in day-to-day activities. Not unexpected is the strong ordering by age of the likelihood an individual uses a computer for day-to-day activities. Those aged 65 and over have a particularly low probability of using computers for day-to-day activities, having a 31.2 percentage point lower probability of such use of a computer than a person aged 25–29. A clear ordering of computer use by educational attainment is also evident, with the notable deviation being that those with a highest qualification of Year 12 have a slightly higher probability of using a computer to assist with day-to-day activities than those holding a Certificate Level 3 or 4.

The estimation results for computer skills show a very similar pattern with respect to age and education, but not with respect to sex. Holding constant age and educational attainment, the measure of computer skill is on average 0.6 higher for men than women. Thus, while men are less likely to use a computer to assist in day-to-day

Table 7.5: Differences in computer use and computer skills by sex, age and educational attainment, 2012

	Use computer	Computer skills
Male	-0.014	0.6
<i>Age group (Reference category: 25–29)</i>		
30–34	-0.021+	-1.4
35–39	-0.056	-2.8
40–44	-0.059	-4.4
45–49	-0.057	-5.1
50–54	-0.112	-6.7
55–59	-0.140	-7.8
60–64	-0.168	-8.4
65 and over	-0.312	-14.2
<i>Educational attainment (Reference category: Year 11 and below)</i>		
Master’s degree or doctorate	0.444	12.1
Graduate diploma or certificate	0.352	9.6
Bachelor’s degree	0.330	9.7
Diploma or advanced diploma	0.254	8.1
Certificate Level 3 or 4	0.123	3.8
Year 12	0.151	5.2
Constant	-	33.4
Number of persons	14,067	11,898

Notes: The first data column presents mean marginal effects estimates obtained from a Probit model of the probability an individual uses a computer to assist in day-to-day activities. The second data column presents coefficient estimates from an ordinary least squares model of the individual’s computer skills. The sample comprises all persons aged 25 and over. + indicates estimate is not significantly different from 0 at the 10% level.

activities, they nonetheless on average report being more skilled with computers than women.

Are computer skills and regular computer use associated with higher earnings? The results presented in Table 7.6 suggest they are indeed. The table presents coefficient estimates from ordinary least squares regression of log weekly earnings of full-time employees, including as explanatory variables the measures of computer use and computer skills. Use of computers to assist in day-to-day activities is associated with a 0.1% increase in earnings, a very small but still statistically significant effect. Effects of computer skills are larger, each 1-point increase in the skills measure associated with a 0.6% increase in earnings for men and a 0.3% increase in earnings for women. Given the potential range of the computer skills measure is from 7 to 49, a movement from the lowest possible score to the highest possible score acts to increase earnings by 25.2% for men (42 times 0.6) and by 12.6% for women (42 times 0.3).



Table 7.6: Effects of computer use and computer skills on earnings of full-time employees, 2012

	Males	Females
Use computer	0.001	0.001
Computer skills	0.006	0.003
<i>Educational attainment (Reference category: Year 11 and below)</i>		
Master's degree or doctorate	0.421	0.450
Graduate diploma or certificate	0.398	0.441
Bachelor's degree	0.390	0.339
Diploma or advanced diploma	0.229	0.143
Certificate Level 3 or 4	0.157	0.060
Year 12	0.155	0.120
Number of persons	2,842	1,809

Notes: Table presents ordinary least squares coefficient estimates from models of the determinants of log weekly earnings. The sample comprises full-time employees aged 25 and over not enrolled in full-time study. The models additionally contain controls for age, place of birth and Indigenous status, region of residence, disability and English proficiency. All estimates are significantly different from 0 at the 10% level.





8

Family background and economic wellbeing

The role played by family background—essentially the circumstances in which an individual grew up—is at the heart of studies of ‘intergenerational mobility’ and the intergenerational transmission of socio-economic advantage and disadvantage. The nationally representative nature of the HILDA Survey, combined with its longitudinal structure, makes it better poised than any other Australian data source to study these intergenerational issues, and its capacity to improve our understanding of these issues will only grow as the length of the panel grows. This chapter briefly considers how family background is associated with economic wellbeing. First, we examine the association between individuals’ current income and wealth, and the retrospectively collected information on their family backgrounds; and second, we examine economic outcomes at age 25 of people who were in the HILDA Survey sample when aged 17.

Associations between family background and material wellbeing

The HILDA Survey collects a considerable amount of ‘one-off’ or ‘historical’ information from respondents, including: family background, such as each parent’s place of birth, educational attainment and occupation; family circumstances at age 14 (in particular, which parents the respondent lived with); the number of siblings; and the age at which the respondent moved out of the parental home. Here we examine the associations between these family background characteristics and household income and wealth. We restrict the analysis to people aged 35–54, on the basis that people in this age range are unlikely to (directly) depend on their parents, and are also relatively unlikely to be partly or completely retired.

Table 8.1 presents estimation results from ordinary least squares regression models of the associations between family background and household equivalised income (see Box 3.2,

page 25) and between family background and household wealth. Household wealth has been measured in Waves 2, 6 and 10 (2002, 2006 and 2012) and so only those three waves are used to estimate the association between family background and wealth. All 12 waves are used to examine the association between family background and income. Income and wealth are both converted to December 2012 prices to remove the effects of inflation.

The family background characteristics examined by the models include: the individual’s immigrant status and age at migration; family living situation at age 14; whether the individual’s parents separated before the individual was 18 years of age; number of siblings; age moved out of the parental home; father’s and mother’s immigrant status and educational attainment; father’s and mother’s employment status when the individual was aged 14; father’s and mother’s occupation when the individual was growing up; and whether the individual’s father was unemployed for 6 months or more while the individual was growing up.



Table 8.1: Association between family background and economic wellbeing—Persons aged 35–54

	Equivalised income		Net wealth	
	Men	Women	Men	Women
<i>Immigrant status (Reference category: Native-born)</i>				
ESB	1,193+	3,979	-110,124+	136,234+
NESB—Europe	-8,353	-4,989	-382,512	-327,611
NESB—other	-7,822	-8,594	50,204+	-59,540+
Age at migration	80+	34+	-4,803	-4,396+
<i>Family living situation at age 14 (Reference category: Lived with both parents)</i>				
Lived with 1 parent only	1,190+	2,205+	101,648	-64,406+
Lived with 1 parent and a step-parent	439+	-2,730+	163,857+	-64,496+
Lived with neither parent	-1,604+	-4,345	-9,561+	-66,258+
Parents separated before age 18	-475+	-1,235+	-124,162	-45,291+
<i>Number of siblings (Reference category: 0)</i>				
1	-2,800+	-4,438+	-240,371	-4,826+
2	-2,490+	-6,367	-196,843+	-11,093+
3 or more	-6,410	-7,554	-314,010	-130,967+
Eldest child	2,036	1,248+	81,196	11,326+
<i>Age moved out of home (Reference category: 21–24)</i>				
Under 18	-3,396	-2,779	-184,877	-106,977
18–20	-747+	-891+	-99,834	-25,768+
25 and over	-5,280	-2,830	-20,779+	-95,676+
<i>Father's immigrant status (Reference category: Native-born)</i>				
ESB	1,525+	609+	132,379	57,547+
NESB—Europe	6,400	-1,595+	231,256+	100,577+
NESB—other	770+	1,624+	-119,931+	-56,511+
<i>Mother's immigrant status (Reference category: Native-born)</i>				
ESB	226+	-1,315+	-52,138+	-123,933+
NESB—Europe	-720+	2,391+	121,384+	169,088+
NESB—other	521+	563+	32,226+	77,747+
<i>Father's educational attainment (Reference category: Some high school only)</i>				
University degree	1,968+	3,578	169,398	60,441+
Completed high school	5,464	1,337+	6,651+	-25,136+
Primary school only	-1,324+	-2,096	-42,399+	-65,537+
Don't know educational attainment	-2,593	-5,201	-41,943+	-162,134
<i>Mother's educational attainment (Reference category: Some high school only)</i>				
University degree	1,789+	3,481	3,035+	27,751+
Completed high school	-1,472+	438+	47,960+	122,789
Primary school only	-1,876+	-407+	-22,846+	46,161+
Don't know educational attainment	-4,566	-865+	-48,919+	-1,474+
<i>Father's employment status when aged 14 (Reference category: Not employed)</i>				
Employed	3,266	2,964	184,178	-32,707+
Don't know if employed	-398+	871+	248,709	4,397+
<i>Mother's employment status when aged 14 (Reference category: Not employed)</i>				
Employed	-391+	2,226	-48,725+	-72,849+
Don't know if employed	-4,920	-383+	-156,481+	171,611+
<i>Father's occupation (Reference category: Technical or trades worker)</i>				
Manager	1,717+	3,936	163,296	170,787
Professional	5,802	5,124	129,759+	329,755
Community, personal service, clerical, administrative or sales worker	852+	876+	12,868+	84,369+
Labourer or machine operator or driver	-2,019	-655+	-108,898	42,672+
Don't know occupation	1,176+	-6,211	266,320	-16,701+
<i>Mother's occupation (Reference category: Technical or trades worker)</i>				
Manager	1,514+	-2,492+	142,864+	85,769+
Professional	3,065	-650+	42,457+	128,091+
Community, personal service, clerical, administrative or sales worker	2,283	1,566+	109,517	123,035
Labourer or machine operator or driver	-1,020+	-3,271	-27,526+	2,9826+
Don't know occupation	-2,110+	-2,340+	119,160+	-51,267+
Father unemployed 6 or more months	-1,054+	-486+	-97,602	-136,500
Don't know if father unemployed 6 or more months	1,239+	-366+	-27,801+	-118,430
Number of persons	27,970	31,310	6,765	7,528

Notes: Table presents coefficient estimates from ordinary least squares regressions. The earnings mode is estimated on all 12 waves (2001–2012) and the wealth model is estimated on Waves 2, 6 and 10. + indicates estimate is not significantly different from 0 at the 10% level.



The estimates for the immigrant status variables indicate that being an immigrant from continental Europe is associated with significant negative effects on both income and wealth of both men and women. For example, compared with native-born men, men born in continental Europe have a mean equivalised income that is \$8,353 lower, holding other factors constant. For women, the income penalty is smaller, but still a statistically significant \$4,989. Wealth effects associated with being born in continental Europe appear to be even more dramatic: all else equal men born in continental Europe have \$382,512 less in household wealth than native-born men, and women born in continental Europe have \$327,611 less in household wealth than native-born women. Negative effects on income, but not wealth, are also evident for NESB immigrants from countries outside Europe. Age at migration to Australia

is only a statistically significant factor for wealth of men, with each additional year of age before arrival in Australia acting to reduce household wealth by \$4,803.

Variables for living situation at age 14 show, curiously, a positive wealth impact for males of living with only one parent (compared with having lived with both parents). There is, however, an even larger opposite (negative) wealth impact for men of having had their parents separate before age 18, implying that in fact there is little net effect of living with only one parent at age 14, but there is a large negative effect if the parents separated when aged 15–17.

The 21–24 age range seems to be the optimal age to move out of the parental home in terms of income and wealth in later adulthood. Negative effects on income and wealth associated with moving out of home before the age of 18 are

particularly large. Relative to moving out at age 21–24, there are also negative effects of moving out at age 18–20 or age 25 and over for income and/or wealth.

Income and wealth when aged 35–54 show a tendency to be negatively associated with the number of siblings, although the estimated effects on wealth of females are not statistically significant. Significant positive effects of being the eldest child are evident for men, but not women. The immigrant status of one's parents has few statistically significant effects on income and wealth, but the educational attainment of the parents appears to matter, with higher attainment mostly translating to higher income and wealth. There is one exception to this pattern, which is that, all else constant, equivalised income of men is highest if the father completed high school but did not obtain a university degree.

A person's father being employed when that person was aged 14 is associated with positive effects on income for both men and women, and positive effects on wealth for men, but not women. It may also be significant that a mother's employment is associated with positive effects on incomes of women, but not men. There are significant effects of both father's and mother's occupation when growing up, for both men and women. Professional and managerial occupations of fathers, and professional and community, personal service, clerical, administrative and sales worker occupations of mothers tend to be associated with positive effects on income and/or wealth. The indicator variable for the father experiencing 6 or more months of unemployment while growing up is also associated with large negative effects on household wealth, but has no significant effects on income.

Economic outcomes at age 25 by level of family income at age 17

As the length of the HILDA Survey panel grows, it will increasingly be possible to examine how outcomes and experiences measured when individuals are young affect their outcomes in later life. With 12 years of data as of Release 12, there is still only a limited capacity to undertake such analysis, since the maximum lifespan that can be examined is 12 years. Nonetheless, this is certainly sufficient to gain important insights into how circumstances when growing up affect outcomes in adulthood.

Here we undertake a very brief analysis of how family income when

growing up affects economic outcomes in early adulthood, following individuals over eight years from the age of 17. Specifically, in Table 8.2, education and labour market outcomes at age 25 are compared across individuals classified by their household's quintile in the income distribution when they were 17 years of age.

The table shows clear differences in economic outcomes at 25 years of age by level of family income when aged 17. In general, educational attainment, employment and earnings at age 25 are higher the further up the income distribution was one's family. There is, however, an important deviation from this pattern in respect of those from the 2nd income quintile. Only 17% of individuals from this quintile had obtained a university degree, which is lower than any other income quintile, including the bottom quintile. Individuals from the 2nd quintile did, however, have a relatively high employment rate and relatively high mean earnings at age 25, both of which are greater than for those from the middle income quintile. The full-time employment rate of those from the 2nd quintile was, nonetheless, still slightly lower than the full-time employment rate of those from the middle quintile.

Table 8.2: Outcomes at age 25 by household income quintile at age 17

<i>Income quintile</i>	<i>Obtained a degree (%)</i>	<i>Employed (%)</i>	<i>Employed full-time (%)</i>	<i>Weekly earnings (\$, December 2012 prices)</i>
Bottom quintile	23.7	70.2	54.4	606.82
2nd quintile	17.0	82.3	62.0	749.66
Middle quintile	29.1	78.9	64.2	735.23
4th quintile	29.8	89.4	74.6	918.04
Top quintile	36.5	94.7	77.9	1,015.23



9

Household expenditure on food



The HILDA Survey has collected information on household expenditure in most waves, although the information collected has varied from wave to wave. An expenditure component that interests many researchers, particularly in relation to low-income households, is expenditure on food. The HILDA Survey has collected information on household food expenditure in all waves other than Wave 2 (2002), but it is only possible to separately identify food expenditure in Waves 1, 3, 4, 5, 11 and 12, when the information was collected in the household questionnaire. (In other waves, expenditure on food eaten at home was part of the broader category 'grocery expenditure'.)

Food expenditure levels

Table 9.1 presents summary cross-sectional information on household weekly expenditure on food (including meals prepared outside the home) for the years in which food expenditure is separately identified. Mean household expenditure, at December 2012 prices, was \$213.04 in 2001 and \$235.85 in 2012, a real increase of 10.7%. Overall, couples with children have the highest mean expenditure on food, on average spending \$279.24 per week. However, elderly couples have experienced the greatest growth in food expenditure between 2001 and 2012; in real terms their expenditure increased by 22.9%.

Expenditure on food is clearly dependent on income, rising from a mean in 2012 of \$187.56 per week in the bottom income quintile to a mean of \$283.28 per week in the top income quintile. However, the differences in food expenditure by income quintile are considerably smaller than the differences in mean income by income quintile. For example, the mean income of the top quintile is approximately four times the mean income of the bottom quintile, whereas the

mean food expenditure of the top income quintile is only 1.5 times the mean food expenditure of the bottom income quintile. This implies that food expenditure is a higher share of income for low income households.

Table 9.2 confirms the fact that food expenditure is a much larger share of household income in low-income households. It presents the mean share of income spent on food by household type and income quintile, pooling all six waves for which the food expenditure data are available. The bottom row of the table shows that households in the bottom income quintile on average spend 26.6% of household income on food, compared with 18.0% for the 2nd quintile, 14.7% for the 3rd quintile, 12.4% for the 4th quintile and only 9.2% for the top quintile.

Disaggregation by household type within each income quintile shows that lone-person households in the bottom quintile have the highest mean food expenditure share, while elderly single people in the top income quintile have the lowest mean food expenditure share. However, within each income quintile, differences in food expenditure shares across households are not large. Most of the variation in food expenditure

Table 9.1: Household weekly expenditure on food (\$, December 2012 prices)

	2001	2003	2004	2005	2011	2012	Change 2001 to 2012 (%)
All households	213.04	214.15	218.79	224.92	240.55	235.85	10.7
Household type							
Couple	189.02	187.84	195.01	196.24	209.98	205.47	8.7
Couple with dependent children	252.23	253.60	260.03	267.00	281.67	279.24	10.7
Lone parent	179.45	182.55	197.41	203.95	210.28	205.60	14.6
Lone person	122.57	117.47	123.08	125.32	137.32	140.50	14.6
Elderly couple	148.39	155.66	157.46	159.95	183.59	182.40	22.9
Elderly single person	87.83	86.13	88.17	87.63	100.09	98.25	11.9
Other	245.17	260.23	217.15	237.80	275.47	247.66	1.0
Equivalised income quintile							
Bottom quintile	163.78	169.37	167.12	169.73	185.29	187.56	14.5
2nd quintile	200.48	200.64	203.00	208.32	223.46	217.80	8.6
Middle quintile	215.21	221.77	225.19	229.86	242.58	231.50	7.6
4th quintile	231.55	229.92	238.04	253.14	256.71	259.16	11.9
Top quintile	254.22	249.08	260.73	263.58	294.74	283.28	11.4



shares is across income quintiles, reflecting the fact that food expenditure is considerably less variable across households than is income.

Table 9.3 focuses on people in the bottom two quintiles of the household income distribution, presenting, in total and by household type, median food expenditure shares and the proportion of individuals in households spending more than 30% of income on food, which can loosely be interpreted as an indicator of financial hardship and possibly 'food insecurity'. The table shows the median food expenditure share of the bottom two income

quintiles has declined for all household types between 2001 and 2012. Couples without dependent children and lone-parent households have experienced the biggest declines in food expenditure shares, respectively declining from 31.8% to 22.1% and from 30.1% to 23.5%.

Reflecting the trend in median food expenditure shares, the proportion of individuals in households spending more than 30% of income on food has fallen substantially for all household types. In 2001, 46.3% of people in the bottom two quintiles of the household income distribution were spending more than 30% of the

Table 9.2: Mean share of household income spent on food, by household type and income quintile

Household type	Income quintile				
	Bottom	2nd	Middle	4th	Top
Couple	28.8	17.5	14.5	12.1	9.2
Couple with dependent children	26.9	18.1	14.8	12.6	9.2
Lone parent	26.5	18.2	14.9	12.1	10.0
Lone person	30.5	18.5	15.3	13.2	10.5
Elderly couple	26.4	19.2	14.6	12.3	8.6
Elderly single person	24.1	16.9	12.8	12.3	7.5
Other	24.5	15.4	14.0	11.3	8.9
All households	26.6	18.0	14.7	12.4	9.2

Note: Sample comprises all individuals in Waves 1, 3, 4, 5, 11 and 12.

Table 9.3: Food expenditure share of individuals in the bottom two quintiles of the household income distribution (%)

	2001	2003	2004	2005	2011	2012
Median share						
All households in the bottom two quintiles	28.9	27.3	27.3	26.8	24.7	24.1
<i>Household type</i>						
Couple	31.8	28.4	30.6	30.7	28.5	22.1
Couple with dependent children	29.2	27.3	27.4	26.5	24.2	26.5
Lone parent	30.1	27.0	28.2	27.6	23.9	23.5
Lone person	31.7	31.5	31.8	31.3	27.4	28.5
Elderly couple	27.5	26.8	26.2	26.2	26.4	25.5
Elderly single person	27.6	24.8	25.0	22.9	22.1	22.2
Other	25.6	30.5	27.0	27.2	26.9	19.5
Percentage spending more than 30% of household income on food						
All households in the bottom two quintiles	46.3	42.5	41.9	42.1	35.0	34.0
<i>Household type</i>						
Couple	53.8	46.3	52.0	52.9	45.3	35.5
Couple with dependent children	46.8	42.0	41.3	43.1	32.1	38.9
Lone parent	50.8	43.6	45.2	41.4	32.0	28.3
Lone person	53.0	53.5	52.5	53.8	45.5	47.0
Elderly couple	40.7	39.2	36.6	38.1	37.6	35.6
Elderly single person	41.7	33.7	32.9	31.6	31.6	30.7
Other	37.4	50.2	41.3	43.3	39.0	19.3

household's income on food. This had fallen to 34.0% by 2012. The 2001 to 2012 period appears, therefore, to have been a good one for improving food security of Australian households.

Determinants of household food expenditure

The effects of household composition, household income, region of residence, and year, on household food expenditure are examined in Table 9.4, which presents coefficient estimates from ordinary least squares regression models. The estimates for the number of each type of person in the household provide a sense of how food costs differ across the different person-types.¹ We see that each man aged 18–64 on average



¹ The model essentially assumes no economies of scale in food expenditure—that is, the model does not allow for the possibility that expenditure per person is lower the larger the household—although the inclusion of a constant captures economies of scale in a very restricted way, with the estimated constant representing a ‘fixed cost’ of food that does not depend on household size. Note also that estimates for the ‘number of persons’ variables are sensitive to the reference categories for income quintile, region of residence and wave.

adds \$53.71 to food expenditure, while each woman aged 18–64 on average adds \$50.66. Men over the age of 65 each add \$52.94 to the household food budget, while women over the age of 65 add only \$38.71. Children cost more to feed as they get older: each child aged under 5 on average adds \$18.92 to the weekly food budget; each child aged 5–9 adds \$30.61; each boy aged 10–14 adds \$38.62; each girl aged 10–14 adds \$37.68; each boy aged 15–17 adds \$57.57; and each girl aged 15–17 adds \$48.39 per week. Boys aged 15–17 therefore appear to be the most expensive to feed of all household members.

Consistent with the evidence in Table 9.1, food expenditure increases with income, with households in the top income quintile spending \$74.69 more per week on food than the bottom quintile, all other factors held constant. Households in the major cities spend more on food than people in other regions. The estimates also indicate that food expenditure was highest in 2011, with the estimated coefficient for 2012 slightly lower than the 2011 estimated coefficient.

Table 9.4: Effects of household composition and other factors on food expenditure (\$, December 2012 prices)

<i>Explanatory variable</i>	<i>Coefficient estimate</i>
Number of men aged 18–64	53.71
Number of women aged 18–64	50.66
Number of men aged 65 and over	52.94
Number of women aged 65 and over	38.71
Number of children aged under 5	18.92
Number of children aged 5–9	30.61
Number of boys aged 10–14	38.62
Number of girls aged 10–14	37.68
Number of boys aged 15–17	57.57
Number of girls aged 15–17	48.39
<i>Income quintile (Reference category: Bottom quintile)</i>	
2nd quintile	4.83
Middle quintile	21.50
4th quintile	40.86
Top quintile	74.69
<i>Region (Reference category: Major urban)</i>	
Other urban	-16.43
Other region	-18.80
<i>Year (Reference category: 2001)</i>	
2003	-0.19+
2004	4.25
2005	9.44
2011	23.02
2012	20.36
Constant	41.50
Number of observations	47,514

Notes: Table presents coefficient estimates from an ordinary least squares regression model of household total food expenditure. The unit of analysis is the household and the model is estimated on Waves 1, 3 to 5, 11 and 12. + indicates estimate is not significantly different from 0 at the 10% level.



10

Sexual identity and economic, health and social outcomes



Individuals' sexual identity represents an important demographic characteristic which, at least until recently, has seldom been collected in household surveys. This is despite its relevance to understanding not only household and family formation, but also labour market behaviour, and even health and wellbeing. In Wave 12, this gap in the HILDA Survey data was filled with the inclusion of a question on sexual identity in the self-completion questionnaire (see Box 10.1, below).

Sexual identity of Australians

Table 10.1 presents the distribution of responses to the sexual identity question, disaggregated by sex and age group. It shows 92.6% of males aged 15 and over and 92.4% of females aged 15 and over identify as heterosexual. Males are more likely than females to identify as homosexual, with 1.8% of males and 1.0% of females in this category, while females are more likely than males to identify as bisexual, with 1.3% of females and 0.8% of males in this category. A further 0.8% of males and females identify as 'other', and 1.0% of males and 0.8% of females indicated they are unsure or don't know.

A significant minority—3.0% of males and 3.7% of females—chose not to disclose their sexual identity. While this is a relatively small fraction of the population, it is

considerably larger than the proportion who report being gay, lesbian or bisexual—2.6% of males and 2.3% of females. The proportion identifying as gay, lesbian or bisexual could therefore be substantially affected by the actual sexual identity of those who preferred not to disclose it. If, for example, all those who preferred not to disclose their sexual identity are in fact homosexual, then the proportion identifying as homosexual would be 4.8% rather than 1.8% for males, and 4.7% rather than 1.0% for females.

There are distinct differences in the distribution of sexual identity across the three age groups examined in Table 10.1. People aged 15–29 are the least likely to report being heterosexual, while people aged 30–49 are the most likely to report being heterosexual. For males aged 15–29, the lower proportion reporting being heterosexual is reflected in higher

Box 10.1: Measurement of sexual identity in the HILDA Survey

The following question was included in the self-completion questionnaire in Wave 12 to identify respondents' sexual identity:

Which of the following categories best describes how you think of yourself?

1. Heterosexual or straight
2. Gay or lesbian
3. Bisexual
4. Other
5. Unsure/don't know
6. Prefer not to say

See Wooden (2014) for further details on the development of the question and an analysis of responses.

Table 10.1: Sexual identity of persons aged 15 and over, 2012 (%)

	15–29	30–49	50 and over	All ages
Males				
Heterosexual or straight	90.2	94.5	92.7	92.6
Gay or lesbian	2.7	1.8	1.2	1.8
Bisexual	*0.7	0.9	0.8	0.8
Other	1.2	*0.2	0.9	0.8
Unsure/don't know	1.3	*0.6	1.1	1.0
Prefer not to say	3.9	2.0	3.3	3.0
Total	100.0	100.0	100.0	100.0
Females				
Heterosexual or straight	90.8	93.3	92.5	92.4
Gay or lesbian	1.0	1.4	0.6	1.0
Bisexual	2.6	1.2	0.6	1.3
Other	*0.6	*0.6	1.1	0.8
Unsure/don't know	0.9	0.8	0.9	0.8
Prefer not to say	4.2	2.7	4.3	3.7
Total	100.0	100.0	100.0	100.0

Note: * Estimate not reliable.

proportions reporting being homosexual (2.7%), 'other' (1.2%) and unsure (1.3%), and also a higher proportion preferring not to disclose (3.9%). For females aged 15–29, the lower proportion reporting being heterosexual is reflected in a higher proportion reporting being bisexual (2.6%) and a higher proportion preferring not to disclose (4.2%). The relatively high proportion of people aged 30–49 identifying as heterosexual mostly reflects a greater willingness to disclose sexual identity, which possibly suggests that a significant fraction of those in the other two age categories who preferred not to disclose their sexual identity are in fact heterosexual.

Characteristics and outcomes of the LGB population

Table 10.2 presents some descriptive comparisons between heterosexual people and lesbian, gay and bisexual (LGB) people, examining various characteristics, lifestyle behaviours, and measures of health and economic and social wellbeing. Lesbian, gay and

bisexual people are grouped together primarily because of the relatively small sample sizes involved. Panel A examines all people aged 15 and over, while Panel B examines people aged 25–59. The table excludes people who selected the 'other', 'unsure/don't know' and 'prefer not to say' response options to the sexual identity question.

The table shows LGB males are more likely than heterosexual males to live in major urban areas, which is perhaps unsurprising. LGB females, by contrast, are no more likely to live in major urban areas than heterosexual females. LGB females are, however, less likely to live outside of urban areas, being more likely than heterosexual females to live in 'other urban' areas.

Considering lifestyle behaviours, it is particularly striking that smoking rates are much higher for LGB people—33.8% of males and 26.8% of females, compared with 19.8% and 14.1% for heterosexual males and females, respectively. Prevalence rates for regular drinking of alcohol and regular exercise are, however, similar for the two sexual-identity groups. Indeed, LGB females are less likely to regularly drink than are heterosexual females. In terms of Body Mass Index (see Box 5.4, page 57), LGB people are nearly twice as likely as heterosexual people to be underweight. LGB males are considerably less likely to be overweight or obese than heterosexual males, while LGB females are similarly likely to heterosexual females to be



Table 10.2: Characteristics and outcomes by sexual identity, 2012

	Males		Females	
	Gay, lesbian or bisexual	Heterosexual	Gay, lesbian or bisexual	Heterosexual
A. All persons aged 15 and over				
<i>Region (%)</i>				
Major urban	76.0	64.5	64.6	64.9
Other urban	11.2	20.9	25.6	20.9
Other region	12.9	14.6	9.8	14.1
Total	100.0	100.0	100.0	100.0
<i>Lifestyle behaviours (%)</i>				
Smoker	33.8	19.8	26.8	14.1
Regular drinker	16.9	17.3	6.5	9.6
Exercise regularly	52.0	53.5	46.6	45.4
<i>Weight (BMI) (%)</i>				
Underweight	*2.9	1.6	*5.8	3.6
Normal weight	44.6	34.3	41.7	46.7
Overweight	34.6	41.6	25.1	26.6
Obese	17.9	22.6	27.4	23.1
Total	100.0	100.0	100.0	100.0
<i>Health and wellbeing</i>				
SF-36 general health (0–100 scale)	66.7	68.4	63.1	68.2
SF-36 mental health (0–100 scale)	70.4	76.0	66.5	73.6
Mean life satisfaction (0–10 scale)	7.6	8.0	7.5	8.0
Mean satisfaction with safety (0–10 scale)	8.0	8.3	8.1	8.2
Social support (0–100 scale)	52.8	53.9	52.6	56.0
<i>Income</i>				
Received income support (annual) (%)	24.1	22.5	28.6	28.4
Mean equivalised income (\$, December 2012 prices)	54,631	53,038	55,031	50,399
B. Persons aged 25–59				
Living with a partner (%)	55.3	73.8	58.7	74.1
<i>Educational attainment (%)</i>				
Degree	38.1	33.2	38.9	36.2
Other post-school qualifications	30.8	39.0	32.6	29.5
No post-school qualifications	31.1	27.8	28.5	34.3
Total	100.0	100.0	100.0	100.0
<i>Labour force status (%)</i>				
Employed full-time	67.9	80.1	50.5	40.3
Employed part-time	17.4	8.6	24.8	32.9
Not employed	14.7	11.3	24.7	26.8
Total	100.0	100.0	100.0	100.0
<i>Income</i>				
Received income support (annual) (%)	10.8	9.4	20.6	16.4
Weekly earnings (\$, December 2012 prices)	1,006	1,265	778	676
Mean equivalised income (\$, December 2012 prices)	58,855	56,223	57,099	53,926

Note: * Estimate not reliable.

overweight, but somewhat more likely to be obese.

On all of the measures of health, subjective wellbeing and social support (see Box 10.2, at right) examined in Table 10.2, LGB people on average fare worse than heterosexual people. Differences in the means of the SF-36 mental health measure (see Table 5.2, page 53) and the measure of life satisfaction are particularly large. For example, mean life satisfaction for heterosexual people is 8.0 (on a scale from 0 to 10), versus 7.6 for LGB males and 7.5 for LGB females. LGB people do, however, appear to fare better in terms of economic wellbeing, with similar rates of income support receipt and slightly higher average incomes compared with heterosexual people.

Restricting attention to people aged 25–59, we see that heterosexual people are considerably more likely than LGB people to be living with a partner. In terms of educational attainment, LGB women tend to be more educated than heterosexual women, while LGB men are considerably more likely than heterosexual men to hold a bachelor's degree, but are also somewhat more likely to have no

Box 10.2: HILDA Survey measure of social support

The HILDA Survey measure of the level of social support an individual has is based on a 10-item question in the self-completion questionnaire. Respondents are asked to indicate, on a 7-point Likert scale, the extent to which they agree with each of the following 10 statements: a. *People don't come to visit me as often as I would like;* b. *I often need help from other people but can't get it;* c. *I seem to have a lot of friends;* d. *I don't have anyone that I can confide in;* e. *I have no one to lean on in times of trouble;* f. *There is someone who can always cheer me up when I'm down;* g. *I often feel very lonely;* h. *I enjoy the time I spend with the people who are important to me;* i. *When something's on my mind, just talking with the people I know can make me feel better;* and j. *When I need someone to help me out, I can usually find someone.*

Assigning a score ranging from 1 to 7 to each response based on the extent of agreement with the statement, the measure of social support used in this report is equal to $(8 - a) + (8 - b) + c + (8 - d) + (8 - e) + f + (8 - g) + h + i + j$, which potentially ranges in value from 10 to 70.

post-school qualifications. Comparisons of labour force status show that LGB men are less likely than heterosexual men to be employed full-time and more likely to be employed part-time or not employed at all. LGB women, by contrast, are more likely to be employed full-time, and slightly less likely to be not employed, than heterosexual women—although they are nonetheless much less likely to be employed full-time, and more likely to be not employed, than LGB men.

Rates of income support among those aged 25–59 are higher for women than men, irrespective of sexual identity, but LGB men have a slightly higher rate of receipt than heterosexual men, and LGB women

have a significantly higher rate of receipt than heterosexual women, with 20.6% of LGB women aged 25–59 receiving income support over the course of the 2011–12 financial year. The high rate of income support receipt for LGB women is interesting given that the higher rate of receipt of heterosexual women (compared with men) is largely driven by receipt of Parenting Payment Single by single mothers. Of course, it is possible that many LGB women are in fact single mothers.

Mean weekly earnings from employment are highest for heterosexual men, followed by LGB men, LGB women and then heterosexual women, reflecting—to a significant extent—differences in rates of full-time employment, part-time employment and non-employment. However, equivalised incomes are, on average, highest for LGB men, followed by LGB women, heterosexual men and heterosexual women. The relatively higher equivalised incomes of LGB people compared with their earnings is largely explained by the lower number of dependent children in the households in which LGB people live.



Quality of relationship with partner

While Table 10.2 shows that partnering rates are lower for LGB people, it is nonetheless the case that more than half of LGB people aged 25–59 are living with a



Table 10.3: Mean relationship quality and satisfaction of persons with a partner, 2012

	Men		Women	
	Gay, lesbian or bisexual	Heterosexual	Gay, lesbian or bisexual	Heterosexual
Satisfaction with relationship with partner (0–10 scale)	8.2	8.5	7.6	8.2
How good relationship with partner is compared to most (1–5 scale)	4.3	4.3	4.2	4.2
How often wish had not got into this relationship (1–5 scale)	1.6	1.4	1.6	1.5
Extent to which relationship met original expectations (1–5 scale)	4.1	4.2	3.9	4.0
How much love your partner (1–5 scale)	4.7	4.7	4.6	4.6
How many problems in relationship (1–5 scale)	1.8	1.7	2.1	1.8
How well partner meets needs (1–5 scale)	4.2	4.2	4.0	4.0

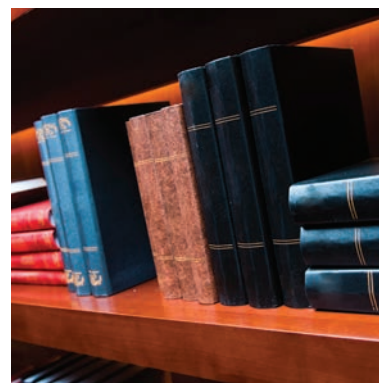
partner. How do relationships with one’s partner compare for LGB and heterosexual couples? The HILDA Survey periodically collects information on various aspects relating to satisfaction with one’s partner and the quality of the relationship more generally. In the Wave 12 self-completion questionnaire, as part of a battery of questions ascertaining satisfaction with various relationships, respondents were asked to rate their satisfaction with their partner on a scale from 0 (completely dissatisfied) to 10 (completely satisfied). In a separate

multiple-item question, respondents were also asked to assess, on a 5-point scale, six aspects of the relationship with their partner: how good the relationship is compared to most; how often they wished they had not got into the relationship; the extent to which the relationship has met their original expectations; how much they love their partner; how many problems there are in the relationship; and how well their partner meets their needs.

In Table 10.3, responses to these questions are compared for heterosexual and LGB couples. In general, the impression is that

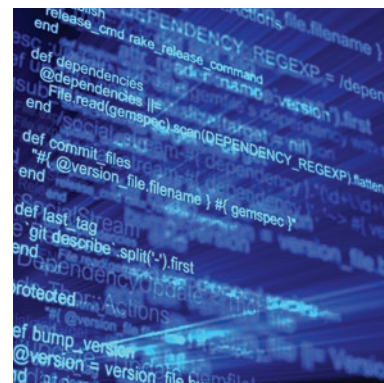
LGB couples tend to be slightly less happy with their relationships. Overall satisfaction is on average slightly lower for LGB couples. Similarly, partnered LGB people are slightly more likely than heterosexual partnered people to report that they wish they had never gotten into the relationship, that the relationship does not meet their original expectations, and that they have problems in their relationship. However, the differences between LGB and heterosexual couples should not be overstated. The responses are, on average, quite similar for the two groups.

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Technical Appendix



A. Overview of statistical methods and terms used in the report

Balanced panel

A longitudinal household survey is known as a household panel study. A **balanced** panel restricts the sample to individuals who have responded to the survey in all waves of the period under study. For example, a balanced panel for Waves 1 to 10 of the HILDA Survey consists of individuals who have responded in all 10 waves.

Deciles and quintiles

A decile is any of the nine values that divide data that have been sorted from lowest to highest into 10 equal parts, so that each part represents one-tenth of the sample or population. Thus, for example, the first decile of the income distribution cuts off the lowest 10% of incomes, and people in the first (or bottom) decile have the lowest 10% of incomes. A quintile is any of the four values that divide data that have been sorted from lowest to highest into five equal parts; for example, people in the first (or bottom) quintile have the lowest 20% of incomes.

Dummy variable

Used in regression analysis, a dummy variable is an indicator variable equal to 1 if a particular characteristic or event is present, and equal to 0 otherwise. In ordinary least squares regression, the coefficient on a dummy variable is interpreted as the mean effect on the dependent variable of the presence of the characteristic/event, holding all else constant.

Gini coefficient

The Gini coefficient is a measure of dispersion often used as a measure of inequality of income and wealth. It ranges between 0 and 1, a low value indicating a more equal distribution and a high value indicating a more unequal distribution. 'Zero' corresponds to perfect equality (everyone having exactly the same) and 1 corresponds to perfect inequality (where one person has everything and everyone else has nothing).

Mean, median and mode

The mean, median and mode are all measures of central tendency. The mean is the statistical term used for what is more commonly known as the average—the sum of the values of a data series divided by the number of data points. The median is the middle data point in data sorted from lowest to highest value; 50% of the data points will lie below the median and 50% above it. The mode is simply the most frequently occurring value of a data series.

Mean marginal effects

Qualitative dependent variable models, such as Probit, are 'non-linear', meaning that the effects of explanatory variables on the probability of an outcome depend upon the value of that explanatory variable at which the effects are evaluated, and indeed also depend on the values of the other explanatory variables at which they are evaluated. For example, in the Probit models of the probability of living with one's parents, presented in Chapter 2, the effects of age will depend on the values of the other explanatory variables. This makes it difficult to interpret coefficient estimates. We therefore report 'mean marginal effects' estimates, which provide a straightforward way of ascertaining the effects of explanatory variables that are analogous to those obtained in linear regression models—that is, the effect on the dependent variable of a 1-unit increase in the explanatory variable. Specifically, continuing with the example above, the mean marginal effect estimate for the 'age 20–21' dummy variable is the mean effect on the probability of living with one's parents, evaluated over all members of the sample, of changing this variable from 0 (not aged 20–21) to 1 (aged 20–21).

Regression models

In statistical analysis, a regression model is used to identify associations between a 'dependent' variable (such as earnings) and 1 or more 'independent' or 'explanatory' variables (such as measures of educational attainment and work experience). In particular, it shows how the typical value of the dependent variable changes when any one of the independent variables is varied and all other independent variables are held fixed. Most commonly, regression models estimate how the mean value of the dependent variable depends on the explanatory variables—for example, mean (or 'expected') earnings given a particular level of education and work experience. Different types of regression models are used depending on factors such as the nature of the variables and data, and the 'purpose' of the regression model. The following types of models are estimated in this report:

- **Ordinary least squares** models estimate linear associations between a dependent variable (such as earnings) and one or more independent (or explanatory) variables (such as age and educational attainment). The method finds the linear combination of the explanatory variables that minimises the sum of the squared distances between the observed values of the dependent variable and the values predicted by the regression model.
- **Probit** models are used to estimate the effects of factors, such as age and educational attainment, on a 'qualitative' or categorical dependent variable, such as labour force status. (The variable 'labour force status' is qualitative because it is not naturally 'quantitative' or numerical, such as is the case with income.) The standard models examine 'binary' dependent variables, which are variables with only two distinct values, and estimates obtained from these models are interpreted as the effects on the

probability the variable takes one of those values. For example, a model might be estimated on the probability an individual is employed (as opposed to not employed).

- **Fixed-effects** models are often applied to panel data such as the HILDA Survey data. They involve accounting for the effects of all characteristics of sample members that do not change over time. For example, if we are interested in how life events impact on life satisfaction, a fixed-effects model is useful because we can control for (remove the effects of) fixed individual traits such as optimism and pessimism. This is achieved by examining how the outcome of interest (e.g., life satisfaction) changes at the individual level in response to changes in explanatory variables (e.g., income). For example, a fixed-effects model will find a positive effect of income on life satisfaction if individuals who experience increases in income from one year to the next tend to exhibit increases in life satisfaction over the same period, and individuals who experience decreases in income from one year to the next tend to exhibit decreases in life satisfaction over that period.
- **Random-effects** models are also often applied to panel data. They differ from fixed-effects models by allowing estimation of the effects of characteristics that do not change over time. This is made possible by assumptions about the distribution and nature of unobserved fixed individual traits, such as intrinsic motivation. The models are relatively complicated. For more information on random-effects models, see, for example, Hsiao (2003).
- A **hazard** model is an approach to examining the factors affecting whether a particular 'state' (such as marriage) continues or not. The hazard is the risk, or probability, of exiting the state, so that what is being explained is the probability of exiting the state, given that the state has not already been exited. In this report, all hazard models estimated are known as Cox proportional hazards models, in which the 'baseline' hazard rate comes from the estimated effects of duration in the state on the hazard rate, and where the log of the hazard ratio (the hazard rate relative to the baseline hazard rate) is a linear function of the explanatory factors. Hazard ratio estimates are presented in this report. A hazard ratio is greater than 1 if an increase in the explanatory variable increases the probability of exit from the state, and is less than 1 if an increase in the explanatory variable decreases the probability of exit from the state. For more information on hazard models, see, for example, Box-Steffensmeier and Jones (2004).

Relative standard error

The standard error of an estimate is a measure of the precision with which the estimate is estimated. For example, assuming statistical independence of the values in the sample, the standard error of the mean of a variable (such as income) is the standard deviation of the variable divided by the square root of the sample size, and there is a 95% probability that the true mean lies within 1.96 standard deviations of the estimated mean. The relative standard error of an estimate is the ratio of the standard error to the value of the estimate. In this report, we have marked with an asterisk (*) estimates which have a relative standard error greater than 25%. Note that a relative standard error that is less than 25% implies there is a greater than 95% probability the true quantity lies within 50% of the estimated value.

Standard deviation

The standard deviation is a measure of variability or 'dispersion' of a variable. It is equal to the square root of the mean squared difference of a variable from its mean value.

Statistical significance

In the context of statistical analysis of survey data, a finding is statistically significant if it is unlikely to be simply due to sampling variability—that is, if it is unlikely to be due to random factors causing specific characteristics of the survey sample to differ from the characteristics of the population. A common standard is to regard a difference between two estimates as statistically significant if the probability that they are the different is at least 95%. However, 90% and 99% standards are also commonly used. The 90% standard is adopted for regression results presented in this report. Note that a statistically significant difference does not mean the difference is necessarily large or significant in the common meaning of the word.

B. Population inferences from the HILDA Survey data

Non-response is an issue for all household surveys, and *attrition* (i.e., people dropping out due to refusal, death, or our inability to locate them) is a further particular issue in all panel surveys. Because of attrition, and despite sample additions due to changes in household composition, panels may slowly become less representative of the populations from which they are drawn, although due to the 'split-off' method, this does not necessarily occur.

To overcome the effects of survey non-response (including attrition), the HILDA Survey data managers analyse the sample each year and produce *weights* to adjust for differences between the characteristics of the panel sample and the characteristics of the Australian population.¹ That is, adjustments are made for non-randomness in the sample selection process that causes some groups to be relatively under-represented and others to be relatively over-represented. For example, non-response to Wave 1 of the survey was slightly higher in Sydney than in the rest of Australia, so that slightly greater weight needs to be given to Sydneysiders in data analysis in order for estimates to be representative of the Australian population.

The population weights provided with the data allow us to make inferences about the Australian population from the HILDA Survey data. A population weight for a household can be interpreted as the number of households in the Australian population that the household represents. For example, one household (Household A) may have a population weight of 1,000, meaning it represents 1,000 households, while another household (Household B) may have a population weight of 1,200, thereby representing 200 more households than Household A. Consequently, in analysis that uses the population weights, Household B will be given 1.2 times (1,200/1,000) the weight of Household A. To estimate the mean (average) of, say, income of the households represented by

¹ Further details on how the weights are derived are provided in Watson and Fry (2002), Watson (2004b) and Summerfield et al. (2013).

Households A and B, we would multiply Household A's income by 1,000, multiply Household B's income by 1,200, add the two together, and then divide by 2,200.

The sum of the population weights is equal to the estimated population of Australia that is 'in-scope', by which is meant 'they had a chance of being selected into the HILDA sample' and which therefore excludes those that HILDA explicitly has not attempted to sample—namely, some persons in very remote regions in Wave 1, persons resident in non-private dwellings in 2001 and non-resident visitors.² In Wave 12, the weights sum to 22.5 million.

As the length of the panel grows, the variety of weights that might be needed also grows. Most obviously, separate cross-sectional weights are required for every wave, but more important is the range of longitudinal weights that might be required. Longitudinal (multi-year) weights are used to retain representativeness over multiple waves. In principle, a set of weights will exist for every combination of waves that could be examined—Waves 1 and 2, Waves 5 to 9, Waves 2, 5 and 7, and so on. The longitudinal weights supplied with the Release 12 data allow population inferences for analysis using any two waves (i.e., any pair of waves) and analysis of any 'balanced panel' of a contiguous set of waves, such as Waves 1 to 6 or Waves 4 to 7. In this report, cross-sectional weights are always used when cross-sectional results are reported and the appropriate longitudinal weights are used when longitudinal results are reported. Thus, all statistics presented in this report should be interpreted as estimates for the in-scope Australian population. That is, all results are 'population weighted' to be representative of the Australian community.

A further issue that arises for population inferences is missing data for a household, which may arise because a member of a household did not respond or because a respondent did not report a piece of information. This is particularly important for components of financial data such as income, where failure to report a single component by a single respondent (e.g., dividend income) will mean that a measure of household income is not available. To overcome this problem, the HILDA data managers *impute* values for various data items. For individuals and households with missing data, imputations are undertaken by drawing on responses by individuals and households with similar characteristics, and also by drawing on their own responses in waves other than the current wave. Full details on the imputation methods are available in Watson (2004a), Hayes and Watson (2009) and Sun (2010). In this report, imputed values are used in all cases where relevant data are missing and imputed values are available. This largely applies only to income, expenditure and wealth variables.

The population weights and imputations allow inferences to be made from the HILDA Survey about the characteristics and outcomes of the Australian population. However, estimates based on the HILDA Survey, like all sample survey estimates, are subject to sampling error. Because of the complex sample design of the HILDA Survey, the reliability of inferences cannot be determined by constructing standard errors on the basis of random sampling, even allowing for differences in probability of selection into the sample reflected by the population weights. The original sample was selected via a process that involved stratification by region and geographic 'ordering' and 'clustering' of selection into the sample within each stratum. Standard errors (measures of reliability of estimates) need to take into account these non-random features of sample selection, which can be achieved by using *replicate weights*. Replicate weights are supplied with the unit record files available to approved researchers for cross-sectional analysis and for longitudinal analysis of all balanced panels that commence with Wave 1 (e.g., Waves 1 to 4 or Waves 1 to 8). Full details on the sampling method for the HILDA Survey are available in Watson and Wooden (2002), while details on the construction, use and interpretation of the replicate weights are available in Hayes (2009).

In this report, standard errors of statistics are not reported. Instead, for tabulated results of descriptive statistics, estimates which have a relative standard error of more than 25% are marked with an asterisk (*). For regression model parameter estimates, estimates that are not statistically significantly different from 0 at the 10% level are marked with a 'plus' superscript (+).

C. Fieldwork process and outcomes

Sample

The HILDA Survey commenced, in 2001, with a nationally representative sample of Australian households (residing in private dwellings). Of the 11,693 households selected for inclusion in the sample in 2001, 7,682 households agreed to participate, resulting in a household response rate of 66%. The 19,914 residents of those households form the basis of the 'main sample' that is interviewed in each subsequent year (or survey wave), but with interviews only conducted with persons aged 15 years or older. Interviews are also conducted with any other person who joins a household in which an original sample member is living. Most of these persons only remain in the sample for as long as they remain living with the original sample member. The exceptions to this are persons who have a child with an original sample member, and recent immigrants. Persons who are known to have died are removed from the sample. We also do not pursue interviews with persons who have moved overseas, with persons who have requested to no longer be contacted, or with persons that we have not been able to contact for three successive survey waves. In 2011, an entirely new 'top-up' sample was added. This resulted in the addition of 2,153 households, and 5,451 persons. The household response rate for the top-up sample was 69%.

Data collection

The annual interviews for the main sample commence towards the end of July each year and conclude by mid-February of the next year. The interviewer workforce comprised 176 interviewers in Wave 12, 144 of whom undertook interviews in person, with the remaining 32 being dedicated telephone interviewers. Most interviews are undertaken in person, usually in the home of the sample member. Some interviews, however, are undertaken by telephone, usually because the cost of sending an interviewer to the location of that sample member was prohibitive or because the sample member had a preference for a telephone interview. In Wave 12, 1,383 interviews (or 7.9% of the total completed) were undertaken by telephone.

² In principle, the in-scope population in Waves 2 to 10 excludes most immigrants arriving in Australia after 2001. However, due to a lack of suitable external benchmarks for this population sub-group, these immigrants are in practice included in the in-scope population. Consequently, in all waves, the HILDA Survey weights sum to the total Australian population inclusive of new immigrants.



Response

Table A1 and Figure A1 summarise key aspects of the HILDA sample for the period examined in this report (Waves 1 to 12).³ Table A1 presents the number of households, respondents and children under 15 years of age in each wave. In Wave 12, interviews were obtained with a total of 17,476 persons; 13,537 in the main sample and 3,939 in the top-up sample. Of the original 13,969 respondents in 2001, 8,543, or 61%, were still participating at Wave 12.

Note that—the top-up aside—the total number of respondents in each wave is greater than the number of Wave 1 respondents interviewed in that wave, for three main reasons. First, some non-respondents in Wave 1 are successfully interviewed in later waves. Second, interviews are sought in later waves with all persons in sample households who turn 15 years of age. Third, additional persons are added to the panel as a result of changes in household composition. For example, if a household member ‘splits off’ from his or her original household (e.g., children leave home to set up their own place, or a couple separates), the entire new household joins the panel. Inclusion of ‘split-offs’ is the main way in which panel surveys, including the HILDA Survey, maintain sample representativeness over the years.

Figure A1 reports the re-interview rate (percentage of persons responding at one wave who responded at the next wave) and the response rate among new entrants to the sample for the continuing sample. As can be seen, re-interview rates for the continuing sample are high, exceeding 95% for the first time in Wave 8, and remaining above that level ever since. In Wave 12, the continuing sample re-interview rate was 96.2%. We expect much lower response rates among new persons joining the sample. Nevertheless, response rates for this group have averaged around 80% for much of the period since Wave 4. In Wave 12, the rate was 78.8%.

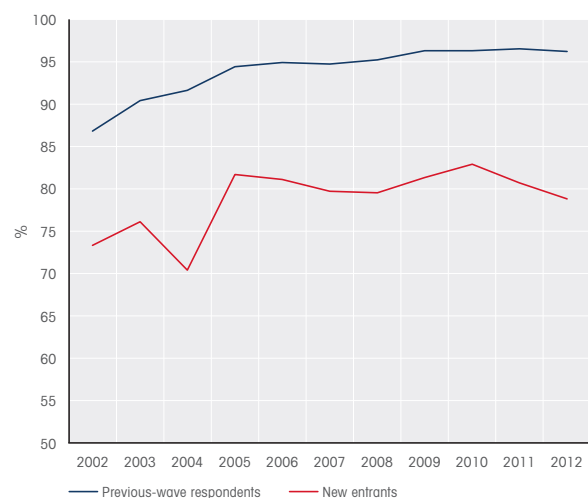
Within the top-up sample, the re-interview rate in Wave 12 was 92.3%. The comparable rate within the continuing sample is the rate recorded in Wave 2, which was 86.8%. The interview rate for new entrants to the top-up sample in Wave 12 was, at 80.5%, also comparatively high.

All persons who are interviewed are also asked to complete a separate paper-based questionnaire. Of the 17,476 persons who were interviewed in Wave 12, 15,380 (88%) returned this self-completion questionnaire.

Table A1: HILDA Survey sample sizes

	<i>Households</i>	<i>Persons interviewed</i>	<i>Children under 15</i>
Wave 1	7,682	13,969	4,784
Wave 2	7,245	13,041	4,275
Wave 3	7,096	12,728	4,088
Wave 4	6,987	12,408	3,887
Wave 5	7,125	12,759	3,897
Wave 6	7,139	12,905	3,756
Wave 7	7,063	12,789	3,691
Wave 8	7,066	12,785	3,574
Wave 9	7,234	13,301	3,621
Wave 10	7,317	13,526	3,600
Wave 11 (continuing)	7,390	13,603	3,601
Wave 12 (continuing)	7,421	13,537	3,607
Wave 11 (top-up sample)	2,153	4,009	1,179
Wave 12 (top-up sample)	2,117	3,939	1,088

Figure A1: HILDA Survey response rates, Waves 2 to 12, continuing sample



³ More detailed data on the sample make-up and, in particular, response rates can be found in the Summerfield et al. (2013).

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