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Living Standards after Retirement: Perceptions and Expenditure Patterns

Bruce Bradbury and Silvia Mendolia

Final Report from the Project: 'Expenditure Costs'

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Notes

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Summary

How much income do people need in retirement in order to maintain their pre-retirement standard of living? In answering this question, this report addresses two sets of issues.

The first set concerns people's expectations of retirement and their perceptions of their living standards after retirement. Do people who are not yet retired expect that they will be able to maintain their living standards in retirement? Do retired people consider that they have actually maintained their standard of living? How do perceptions of financial hardship and financial satisfaction and prosperity change as people age?

The second set of questions addresses the actual expenditure patterns of retired people. Do these patterns suggest that the expenditure needs of retired people are less than those of people in the pre-retirement years?

Data from the first six waves of the Household Income and Labour Dynamics in Australia survey (HILDA) (2001 to 2006) are used to investigate people's expectations and perceptions (Section 3). About a third of people who have not yet retired believe that they will not have enough in retirement to maintain their standard of living. Among those who had already retired, about half feel that their current income is less than they had expected, and only 13 per cent consider it to be more than expected. However, when asked about their standard of living since retirement, the fraction saying it had decreased was similar to the fraction saying it had increased. The disparity between these two patterns could be due to reductions in expenditure needs, or it could be due to people changing their minds about what constitutes an acceptable standard of living in the light of income reductions.

The HILDA survey also contained information on people's perceptions of their prosperity and their reported satisfaction with their financial situations. We find that the former does not change much with age, while the latter increases strongly as people age. Similarly, experience of financial hardship declines steeply with age. This is despite the fact that income falls steeply across the retirement years in Australia.

On the face of it, these results suggest that people are content with their attained living standards in retirement. This contentment, however, could reflect preference adaptation to a situation of lower living standards (possibly in conjunction with other factors such as reduced volatility of income).

Section 4 of the report uses data from two ABS Household Expenditure Surveys (HES) (1998-99 and 2003-04) to examine expenditure patterns in retired and non-retired households.

There are changes in household expenditure patterns that are directly influenced by retirement. These include the reduction in the costs associated with working, price concessions associated with pension receipt, and increased health costs. Under plausible simplifying assumptions, expenditure on goods *other* than these directly affected goods can be used as an indicator of living standards.

The data from the HES surveys suggest that decreases in working expenses are more than offset by increases in health-related costs after retirement. If anything, the evidence suggests that after-housing income should *increase* after retirement to allow households to maintain the same level of non-retirement-related expenditure they had prior to retirement.

There is thus a disjuncture between falling incomes, maintained or increased financial satisfaction and greater expenditure needs in retirement – ‘a retirement satisfaction puzzle’. We speculate that the observed subjective satisfaction with living standards among the elderly primarily reflects an adaption to reduced actual living standards and possibly the influence of peer effects.

However, it is possible that our conclusions are influenced by our decisions about those goods that are assumed to not be directly affected by retirement. A natural extension to this research will be to test whether the conclusions are robust to alternative ways of defining such categories of goods.

1 Introduction

What should be the income target for retirement income policy? Should it seek to maintain effective consumption at the same level as pre-retirement? If so, how much do retired people need to spend in order to maintain their standard of living? Answers to these questions are crucial to retirement income policy – but evidence is scant.

Uncertainty in this area stems from two sources. First, it is not clear what the objective of retirement incomes policy should be. Should it seek to maintain living standards at pre-retirement levels, or should policy accept that living standards will fall in retirement? Answers to this will depend upon social norms of behaviour and objectives which might change over time. Second, any such framework objective then needs to be assessed in the light of evidence of actual patterns. In doing this, we need to assess how living standards should be measured in this context, and whether they do in fact fall after retirement.

This report addresses two specific sets of questions. The first set, discussed in Section 3, concerns expectations and perceptions of living standards. Do people who are not yet retired expect that they will be able to maintain their living standard in retirement? Do retired people consider that they have actually maintained their standard of living? How do perceptions of financial hardship and financial satisfaction and prosperity change as people age? The second set of questions addresses the observed expenditure patterns of retired people (Section 4). Do they suggest that the expenditure needs of retired people are less than those of people in the pre-retirement years? If so, by how much are expenditure needs reduced (or increased)?

The results of these two sets of investigations are contradictory. Income and expenditure decline with age, but people are generally satisfied and less likely to report financial hardship. After retirement, some expenditure needs decrease (eg work expenses) while others increase (eg health care costs). The data from the HES surveys suggest that the latter effect dominates. This implies that, in order to maintain their pre-retirement level of expenditure on goods that are not affected by either type of change, retired people would need to increase their total (after-housing) income and expenditure in retirement.

The report concludes with a discussion of possible limitations of the analysis and suggestions for further research.

2 Background

Though there is substantial discussion of policies that might enable people to reach various expenditure targets in retirement, there is very little research seeking to define these targets. Some commentators simply assume that consumption needs are constant with age (e.g. Yuh, Montalto and Hanna, 1998); others apply simple 'rules of thumb'.

Vince FitzGerald reported on these different approaches to the 2002 Senate Select Committee on Superannuation (SSCS, 2002). He reported a general tendency across the OECD for retirement income systems to aim at disposable income replacement rates of around 70 to 80 per cent (comparing disposable incomes immediately before and after retirement). In its conclusions, the Senate committee concluded that there was a strong degree of consensus for average replacement levels of expenditure of around 70-80 per cent. This ratio should be higher for those on low incomes and lower for those on high incomes, and any adequacy benchmark should focus on consumption levels in the first year of retirement.

Though this ratio is numerically identical to the one proposed by FitzGerald, it refers to a different concept. FitzGerald was referring to ratios of disposable income rather than to ratios of expenditure. For the elderly, these are often different. Expenditure might be higher than income because they can draw on savings, and consumption might be higher still because of the services provided by owner-occupied housing. In any event, the evidence basis for recommendations based on either approach is very thin.

There is, however, extensive research on the actual consumption behaviour of people in retirement. A key question here is the 'retirement consumption puzzle'.¹ Economic life-cycle theory suggests that people should use borrowing and saving to smooth their consumption over time – particularly with respect to anticipated events such as retirement. But there is strong evidence that expenditure tends to fall after retirement.

This is partly explained by reductions in work-related expenditures. However, most researchers also observe reductions in food expenditures, which are more likely to be due to falls in living standards (though there could potentially be some reductions due to increased home production). Barrett and Brzozowski (2009) examined this issue using the grocery and food expenditure measures collected in the Australian HILDA survey. They found a fall in grocery spending of around 7 per cent and a fall in food expenditure of 8-9 per cent associated with the transition to retirement – supporting the conclusions of the international literature that consumption falls with retirement. Measures of reported financial hardship, however, do not show a clear pattern, possibly suggesting some habituation to lower living standards.

Four possible explanations could be advanced for this finding of falling consumption in retirement.

- It is an artefact of incorrect measurement of true consumption, e.g. not taking full account of home production.
- Consumption is in fact lower in retirement – and people are surprised by this once they reach retirement.

¹ See the surveys by Hurst (2008) and Barrett and Brzozowski (2009).

- Consumption is lower in retirement, people would prefer to smooth their consumption, but are unable to shift resources effectively so as to do this.
- People prefer to have lower consumption in retirement. Such preferences might be stable features of retirement (e.g. older people prefer to have quieter lives), or they might be due to social norms adapting to economic norms of reduced income in retirement. If the latter, then these might change in the future as retirement incomes increase.

The strand of research that has most directly addressed the question of the adequacy of retirement incomes is that based on the budget standards methodology. This explicitly seeks to set expenditure levels based upon social norms for consumption patterns at different standards of living (with some adaption for actual expenditure patterns). Saunders et al (1998) calculated the expenditure required to reach a 'modest but adequate' living standard for several household types.² The amount required by a retired home-owning couple was \$388/week while a couple aged 40 and 35, purchasing a home and both working full-time required \$643/week (1997 dollars). On these calculations, the older couple required only 60 per cent of the expenditure of the younger couple. Much of this difference relates to the greater housing costs of the younger households, and this is generally not appropriate when comparing people immediately before retirement with those immediately after. If housing costs are excluded, the proportion required by the retired couple becomes 85 per cent of the income of the non-retired couple.³ Older couples are assumed to have lower expenditures for (in decreasing absolute importance) transport, clothing, food, and household goods and services, and they have higher expenditure needs for leisure and health. Given that the budget standards method relies on both social norms of behaviour and actual behaviour, it is not possible to decide which of the factors categorised under the dot points listed above produce this result. It is possible that all of them had some impact.

One Canadian study that focussed on changes in expenditure patterns as people age is that by Denton, Mountain and Spencer (2006) (using Canadian data). Using simulations derived from their estimated consumer expenditure system, they found that, if incomes do not fall, patterns of expenditure do not change appreciably after retirement. However, there was some evidence of a slight fall in the share of expenditure devoted to shelter and food, suggesting that real living standards might rise slightly if income were held constant. If income falls substantially after retirement, expenditure patterns shift in the direction that would be implied by a fall in living standards. They conclude that most of the changes in expenditure patterns associated with age are not due to changes in tastes, but are simply due to the decline in income associated with retirement.

² Saunders, Patulny and Lee (2005) calculated more recent estimates of income needs in retirement, but not in comparison with non-retired households.

³ The corresponding ratios for the 'low cost' living standard were 77 and 96 per cent. See Saunders et al, 1998, p.590.

3 Expectations and perceptions

Do people expect that they will be able to maintain their living standard in retirement? Do retired people consider that they have maintained their previous standard of living? How do perceptions of financial hardship and financial satisfaction and prosperity change as people age? This section addresses these questions using data from the Household Income and Labour Dynamics in Australia survey (HILDA). This is a large nationally representative panel survey of Australian households. Data from the first six waves of the survey (conducted from 2001 to 2006) are used here. (For more information on the survey, see Watson, (ed) 2009).

3.1 Retirement expectations

In 2003, the HILDA survey asked respondents about their expectations and experiences of living standards after retirement. Table 1 summarises some of these responses. People who had not yet retired were asked whether they anticipated being able to maintain their standard of living after retirement. A substantial fraction, just over one-third, reported that they did not expect to have enough to maintain their current standard of living.

Table 1 Living standards in retirement: expectations and experience (HILDA Wave 3, 2003)

People aged 45 or more, who have not yet (completely) retired	
Do you expect your retirement income to be more than enough, just enough or not enough to maintain your current standard of living?	
	% (weighted)
More than enough	9.2
Just enough	56.7
Not enough	34.0
Total	100.0
N (unweighted)	2,807
 People who have retired and are not working	
Would you say (your standard of living) is better or worse since you retired?	
Much worse	5.8
Worse	21.8
The same	51.6
Better	15.5
Much better	5.3
Total	100.0
N (unweighted)	1,206
 Thinking about your current income [from all sources], is this more or less than you had expected it to be when you retired?	
Much less	24.4
A little less	26.0
About the same	36.4
A little more	11.1
Much more	2.2
Total	100.0
N (unweighted)	1,175

Notes: Source, HILDA Wave 3 (Release 5.1). Cross-section weights used.

People who had already retired were asked to compare their standard of living before and after retirement. About half said it was the same. Of the remainder, 27 per cent reported a worse standard of living and 21 per cent a better standard of living.⁴ They were also asked whether their current income was what they anticipated before retirement. Around half reported that it was less than expected.

One possible interpretation of these results is that the very substantial drop in income associated with retirement was unanticipated by the current retired generation, but that the next generation about to retire now expects it. Though people are more likely to say that both their living standards and their incomes have deteriorated since retirement than to say they have improved, the difference is not large. This could be because there are offsetting cost reductions associated with retirement, or it could be because people reduce their expectations of ‘standard of living’ so as to require less expenditure.

3.2 Perceptions of living standards and financial hardship

The HILDA survey also regularly collects information on respondents’ evaluations of their financial situations and reports of financial hardship.⁵

Respondents are asked in the interview part of the survey to score their satisfaction with different aspects of their lives on a 0-10 scale (high scores indicating more satisfaction). One of these aspects is *satisfaction with financial situation*. (Others include home, employment opportunities, how safe they feel, community, health and neighbourhood, and amount of free time). For the purpose of this present report, the variable, *satisfaction with financial situation*, is standardised with a mean of zero and a standard deviation of one (for the population of people aged 45 and over).

In the self-completion questionnaire part of the survey, respondents are asked a question about their *perceived prosperity*. ‘Given your current needs and financial responsibilities, would you say that you and your family are... Prosperous, very comfortable, reasonably comfortable, just getting along, poor, very poor?’ This is mapped onto a six-point scale (high scores recoded here to indicate more prosperity) and standardised as for the satisfaction score.

They are asked whether any of a number of events had occurred for them since the beginning of the year because of a shortage of money:

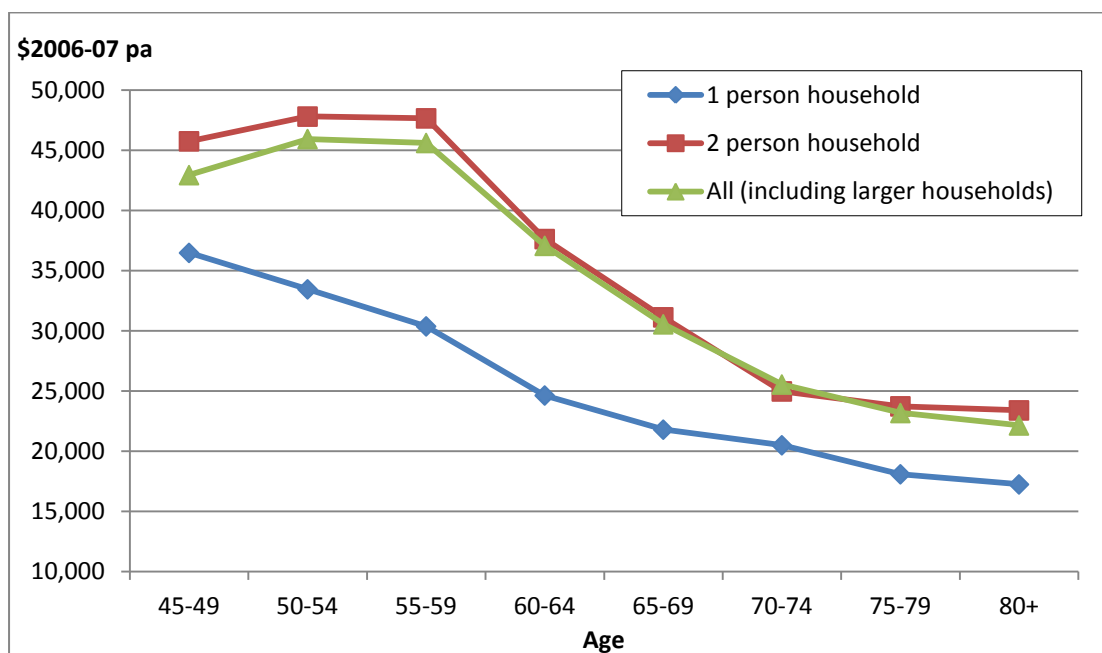
- could not pay electricity, gas or telephone bills on time
- could not pay the mortgage or rent on time
- pawned or sold something
- went without meals
- was unable to heat home
- asked for financial help from friends or family
- asked for help from welfare/community organisations

⁴ In addition, most people reported having more leisure and more reported being happier (not shown here).

⁵ Similar information is collected in the ABS HES. The HILDA survey data is used here to take advantage of the repeated collection of this information over several waves.

We begin by considering the first six waves of the HILDA survey as a pooled cross-section survey (ie ignoring the panel structure of the data). To put the indicators of financial prosperity and hardship in context, Figure 1 shows the average equivalent income of each age group. Though some of the pattern shown in the figure might reflect cohort effects, most of the pattern is likely to stem from lifecycle changes in income. After a peak at age 50-59, average household income declines steadily with age. Even taking into account the smaller household size in later years, equivalent income when people are aged in their 70s is only around half the income they had in their 50s. This is not offset by increases in wealth, since average wealth holdings also decline after retirement age.⁶

Figure 1 Average household equivalent income by age



Notes: Source HILDA survey, waves 1 to 6. The table shows mean annual equivalent household disposable income of individuals for the financial years 2000-01 to 2005-06, inflated to 2006-07\$ using the CPI. The equivalence scale is the square root of the number of people in the household (for single people, equivalent income equals actual income).

Figure 1 shows a consistent difference in average equivalent income between couples and singles, but this is an arbitrary feature of the square-root equivalence scale used to calculate equivalent income. The square-root scale assumes that singles need around 71 per cent of the income of couples in order to reach the same living standard. The pension relativity was around 61 per cent prior to 2009, and was increased to around 67 per cent as a result of the recommendations of the Harmer Review in 2009 (Harmer, 2009).⁷

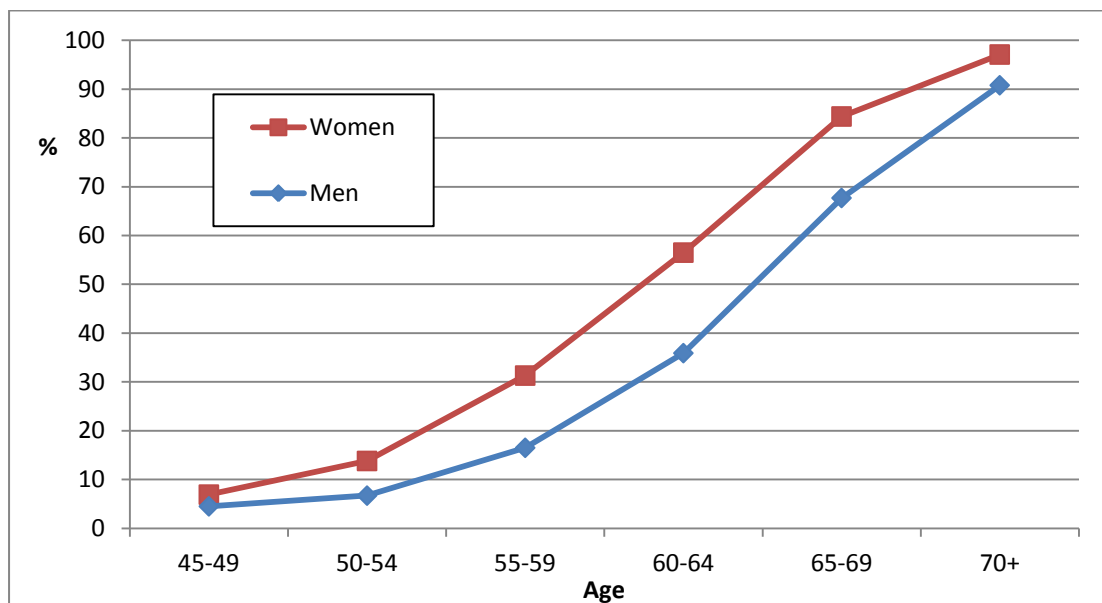
Figure 2 puts these age-related patterns in the context of retirement. People are defined as retired in this figure if they had previously worked for two weeks or more, were now not in the labour force (i.e. were neither employed nor unemployed) and did not intend to look for, or do, paid work in the future. For both sexes, retirement rates increase steadily from the late 40s. By age 60-64, 36 per

⁶ See ABS Cat No 6554.0 *Household Wealth and Wealth Distribution, Australia, 2003-04*, Table 20.

⁷ See also Bradbury (2009) for further discussion of Age Pension relativities, and Bradbury and Gubhaju (2009) for further information on the incomes of the older population.

cent of men and 57 per cent of women are retired under this definition. By age 65-69, these percentages have increased to 68 and 84 per cent respectively. Among the 70+ age group, some 9 per cent of men say that they have not retired.

Figure 2 Self-described retirement by age, 2007



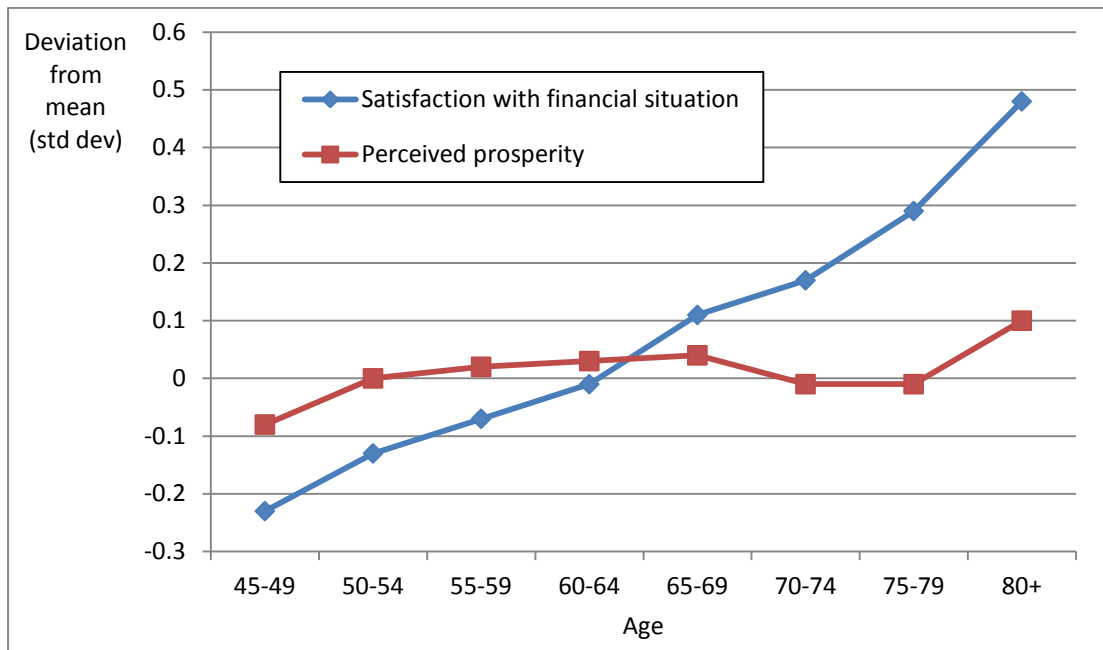
Notes Excludes people who had never had paid work for two weeks or more and people whose retirement status could not be determined. Source, ABS 4102.0 Australian Social Trends, March 2009 (original source ABS cat. No. 6361.0).

This definition of retirement is not the only one that is commonly used.⁸ For many policy purposes, an explicit age-based criterion is more useful, as age defines eligibility for Age Pension. For this reason, and also because unobserved selection effects could lead to correlations between subjective views about future work plans and perceptions of financial hardship, age is used as the primary indicator of retirement in most of the results that follow.

Figure 3 shows the mean levels of financial satisfaction and prosperity by age (standardised as described above). Perceived prosperity is roughly constant across age groups, but there is a strong tendency for satisfaction with financial situation to increase with age, despite the associated steady fall in income.

⁸ For further discussion of the complexities of defining retirement and retirement expectations, see Cobb-Clark and Stillman (2009).

Figure 3 Average financial satisfaction and prosperity by age

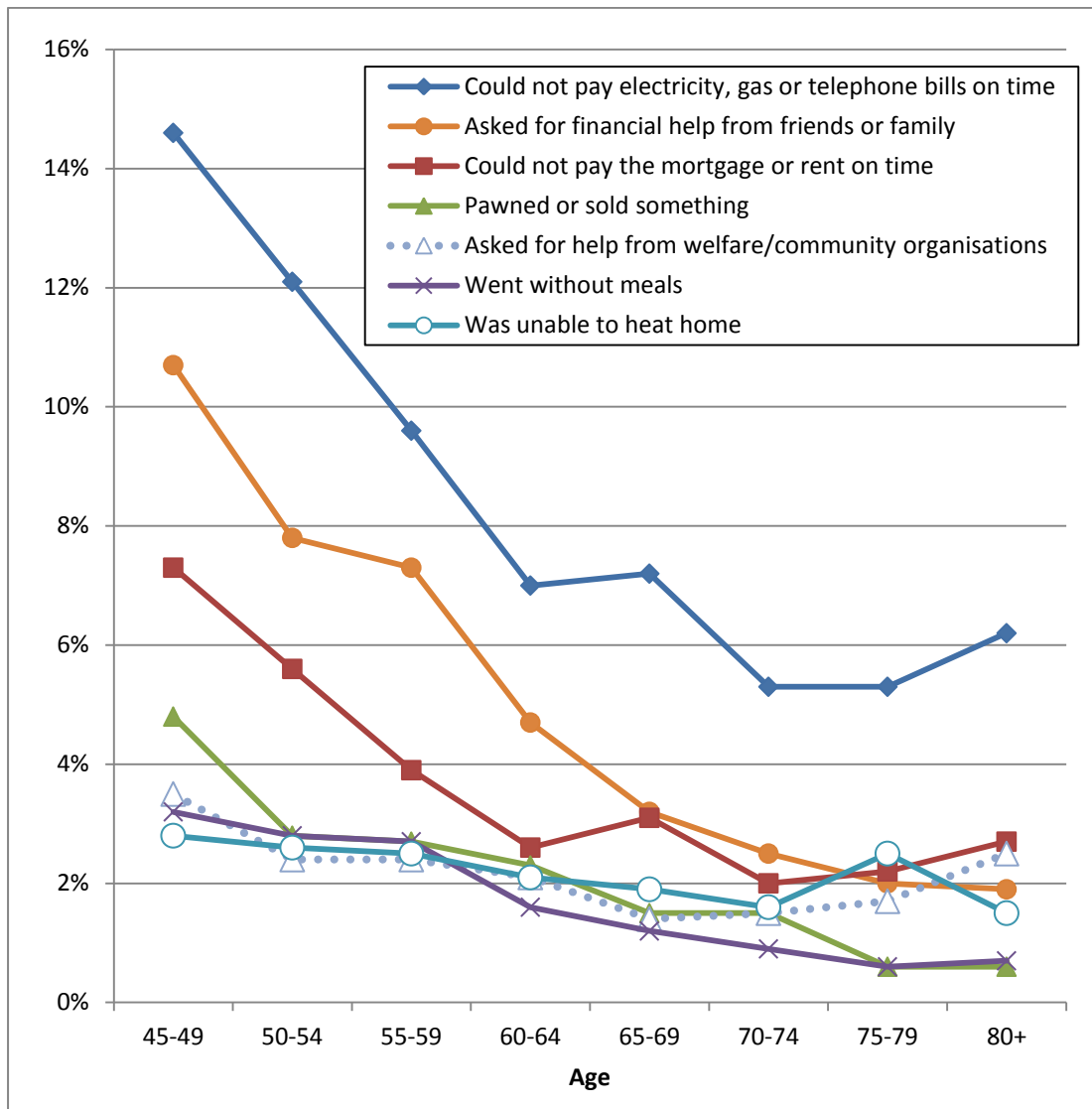


Notes: Source HILDA survey, pooled cross-section data from waves 1 to 6. Both variables are standardised to mean of zero and variance of one.

Figure 4 shows the proportion of the population aged 45 and over who reported different forms of financial hardship. The measures generally decrease with age,⁹ again, despite the decrease in income. For the two measures describing not being able to pay bills on time, the rate among the 65-69 age group is slightly higher than that among the 60-64 age group, suggesting some problems in adjusting to new lower income levels. There is also an indication of these measures increasing in the oldest two age groups, particularly with respect to asking for help from welfare or community organisations. However, even though the question asks about this help in the context of a shortage of money, it is possible that people interpret it to mean asking for help because of disability or illness rather than because of financial need per se.

⁹ The slope of the decrease is greater for those measures that have higher initial levels of hardship. However, in proportionate terms (e.g. when using a log vertical scale) the slopes are similar for all the measures (except where the ‘asking for help from welfare organizations’ measure turns up).

Figure 4 Experience of financial hardship by age



Notes: Proportion of people in age group reporting the specified hardship example. Source HILDA survey, pooled cross-section data from waves 1 to 6.

Table 2 and Table 3 (below) investigate these relationships more systematically. The left-hand panel summarises the results of a regression of satisfaction or prosperity as a function of age (cubic), household type (couple, single and other) and survey wave. This regression treats all six waves as a pooled cross-section (the standard error calculations take account of the panel and survey design structure).¹⁰ The survey wave is included as an explanatory variable to capture the hypothesis that responses might change with the experience of participation in the survey, changes in the survey design and/or because of changes in the social or economic environment. Results are also presented separately for women. To show the impact of age (estimated as a cubic function), the table shows the impact of increasing from age 45 to 55, from 55 to 65, from 65 to 75 and from 75 to 85.

¹⁰ The jackknife method is used, based on the HILDA-provided cross-section replication weights.

Table 2 The association between financial satisfaction and prosperity with age**Men and women**

	Cross-section OLS		Fixed effects	
	Effect size	t	Effect size	t
Perceived prosperity				
Age 55 minus age 45	0.13	2.8	0.09	1.6
Age 65 minus age 55	0.01	0.5	0.10	1.7
Age 75 minus age 65	-0.01	-0.7	0.08	1.3
Age 85 minus age 75	0.06	1.6	0.04	0.5
Financial satisfaction				
Age 55 minus age 45	0.13	3.3	0.15	2.9
Age 65 minus age 55	0.17	9.4	0.23	5.3
Age 75 minus age 65	0.20	9.1	0.19	4.2
Age 85 minus age 75	0.22	7.1	0.05	0.8

Women only

	Cross-section OLS		Fixed effects	
	Effect size	t	Effect size	t
Perceived prosperity				
Age 55 minus age 45	0.10	2.1	0.15	2.4
Age 65 minus age 55	-0.01	-0.3	0.11	1.9
Age 75 minus age 65	-0.02	-1.0	0.08	1.1
Age 85 minus age 75	0.04	0.9	0.04	0.4
Financial satisfaction				
Age 55 minus age 45	0.13	2.8	0.07	0.9
Age 65 minus age 55	0.19	8.5	0.17	2.6
Age 75 minus age 65	0.21	7.8	0.13	1.7
Age 85 minus age 75	0.19	6.2	-0.05	-0.6

Notes: Calculated from the HILDA survey, waves 1 to 6. The dependent variables are financial satisfaction and perceived prosperity scores, normalised to have standard deviation of one. The parameter estimates are thus effect sizes, showing the number of standard deviation units increase in the dependent variable when increasing age by 10 years. The left-hand panel shows a pooled OLS estimation, including a cubic function of age and dummy variables for each survey wave. The right-hand panel shows a fixed effects estimation, controlling for waves 3 to 6 (vs waves 1 or 2). The ‘t’ columns show the estimate divided by the standard error, calculated using the cross-section replication weights provided in the HILDA survey (absolute values greater than 1.96 are significant at the 5% level).

The top-left number in Table 2 shows that as people increase from age 45 to age 55, their expressed financial satisfaction increases by 0.13 standard deviations – a small, but statistically significant, increase. Subsequent decades see no increase, though there is a small (not significant) increase after age 75. This mirrors the pattern shown in Figure 3, as does the steady increase in financial satisfaction, shown in the second panel.

These estimates also control for the survey wave in which the data was collected. These parameters (not shown) indicate that perceived prosperity and satisfaction increased significantly after the second wave, possibly due to changes in the survey methodology. The fixed effects estimates on the right-hand side of the figure also control for interview wave, but only by distinguishing between waves 1 or 2 vs the remaining waves. It is not possible to control for each wave separately, as the change in wave is strongly associated with the change in age.

Table 3 Association between financial hardship and age

	Increase in incidence (%)	t
Could not pay electricity, gas or telephone bills on time		
Age 55 minus age 45	-5.5	-3.6
Age 65 minus age 55	-3.4	-5.3
Age 75 minus age 65	-1.2	-2.4
Age 85 minus age 75	0.4	0.6
Asked for financial help from friends or family		
Age 55 minus age 45	-4.8	-4.5
Age 65 minus age 55	-2.8	-6.1
Age 75 minus age 65	-1.8	-4.8
Age 85 minus age 75	-0.8	-2.3
Could not pay the mortgage or rent on time		
Age 55 minus age 45	-3.2	-3.5
Age 65 minus age 55	-1.8	-5.4
Age 75 minus age 65	-0.3	-1.2
Age 85 minus age 75	0.5	1.0
Pawned or sold something		
Age 55 minus age 45	-4.0	-3.5
Age 65 minus age 55	-0.8	-2.4
Age 75 minus age 65	-1.3	-3.2
Age 85 minus age 75	-0.7	-4.0
Asked for help from welfare/community organisation		
Age 55 minus age 45	-1.7	-2.2
Age 65 minus age 55	-0.7	-2.5
Age 75 minus age 65	0.0	-0.1
Age 85 minus age 75	0.7	1.1
Went without meals		
Age 55 minus age 45	-1.1	-1.3
Age 65 minus age 55	-1.1	-3.3
Age 75 minus age 65	-0.8	-3.5
Age 85 minus age 75	-0.3	-1.9
Was unable to heat home		
Age 55 minus age 45	-0.2	-0.3
Age 65 minus age 55	-0.5	-1.6
Age 75 minus age 65	-0.1	-0.4
Age 85 minus age 75	-0.1	-0.2

Notes: Calculated from the HILDA survey, waves 1 to 6. Estimated via a logistic regression across the pooled cross-section. The regression includes a quartic function of age, sex and flags for each wave of the survey. The estimates show the predicted increase in incidence when increasing age by 10 years as indicated. The 't' column shows the estimate divided by the standard error calculated using the cross-section replication weights provided in the HILDA survey (absolute values greater than 1.96 are significant at the 5% level).

The fixed-effects regression model shows the impact of *changes* in age on *changes* in expressed satisfaction or prosperity. This is equivalent to a regression that includes a dummy variable for each

person. If, for example, the patterns shown in the cross-section regression were due to different cohorts having different expectations,¹¹ this would not appear in the fixed-effects regression.

From the data shown here, it is not obvious which estimation approach is more valid, as the fixed effects estimates cannot fully control for changes between the survey waves (e.g. changes due to macro economic conditions). However, the results from both approaches are broadly the same. The fixed effects estimates show a somewhat greater increase in perceived prosperity than the OLS estimates, but a similar increase in financial satisfaction. Both approaches show that financial satisfaction and prosperity either increase or stay constant as people age.

The picture for women shown in the bottom half of the table is similar to the pattern for men and women combined. The only difference is that the fixed effects estimates for financial satisfaction tend to increase with age at a slower rate than for the population in general.

Table 3 shows the cross-sectional relationship between the different financial hardship measures and age. This table mirrors the relationships shown in Figure 4. With a few minor exceptions, all the hardship measures decrease with age, but at a decreasing rate. Though Figure 4 shows some measures of hardship increasing with age, Table 3 shows that none of the increases is statistically significant.

3.3 Interpretation

After peaking for people in their mid-50s, the average income of Australians declines steeply as they age. At the same time,

- their perceived prosperity stays roughly constant;
- their satisfaction with their financial situation strongly increases; and
- their experience of financial hardship (such as not being able to pay bills, or having to ask for financial help) declines steadily.

How should we interpret this apparently paradoxical relationship between income and perceptions?

One interpretation is that needs decline faster than income (and wealth). This would imply that the current system of income support for the elderly was more than sufficient for them to maintain their satisfaction with their financial situation and to avoid hardship. In turn, this suggests that attempts to expand the provision of income support for the aged via the expansion of superannuation beyond the current model were not needed, and that the Age Pension was already quite effective in ameliorating financial stress.

However, the widespread political support for superannuation and adequate Age Pensions must surely weigh against this explanation. It is also inconsistent with cross-national evidence showing that the fall in income after retirement is particularly steep in Australia – even though this is offset to some extent by a high level of home ownership (Bradbury, 2008).

An alternative explanation for the paradox is that these responses reflect factors other than just the standard of living of the respondents. In particular, expectations and financial management are likely to be important. For example, people may lower their expectations as they age, and establish more

¹¹ Or different mortality rates among people with different satisfaction levels.

stable patterns of income and consumption. A greater stability of finances in old age, in particular, might reduce the prevalence of problems of not being able to pay bills or needing to ask for financial help. In addition, we cannot assume that these expectations will also be maintained in the future – when cohorts with experience of higher consumption levels reach retirement.

It is thus not clear whether these expressions of financial prosperity and hardship should be taken at face value. The next section draws upon the quite different evidence of household expenditure patterns to examine these issues.

4 Expenditures in retirement

4.1 The impact of retirement on expenditure patterns

Do people need to spend less (or more) to maintain the same standard of living in retirement? For most people, both income and expenditure fall after retirement. The results of the previous section suggest that satisfaction with financial situation increases after retirement while the experience of financial hardship decreases. If these are used as the standard of living indicator, they suggest that people need substantially less in retirement. But possibly this represents changes in expectations associated with retirement. What happens if we focus more directly on the consumption patterns of the retired? Does this also indicate that less is needed?

As noted in the introduction, previous research suggests that consumption expenditures do fall in retirement. Why would people choose to have a lower standard of living at one particular stage of their life? This has been described as the ‘retirement consumption puzzle’. One answer to this question relates to variations in needs across the life cycle. There are several reasons why expenditures might be expected to change after retirement, even when people maintain the same living standard:

- Reductions in work-related costs. These include reductions in transport costs, work-related clothing and meals out (e.g. lunch purchases).
- Increases in health service consumption because of increased age. Even though this is a function of age rather than retirement per se, the strong association between the two means that we should probably consider this as a characteristic of aging and retirement.
- Some of these increases in consumption are offset by the lower prices associated with pension or seniors’ concessions. Although some of these concessions are available to people prior to retirement, and not all retired people receive pensioner concessions, the price of many items is lower for the average retired person.
- At the same time, retirement is associated with a very different pattern of time allocation. More time for home production will generally (but not necessarily) result in reduced expenditure, e.g. a switch from the purchase of prepared food items to food ingredients. Similarly, there may be an increase in some leisure activities, which might increase expenditure on associated items.
- Life-cycle patterns in housing financing. Most Australian households follow a typical lifecycle pattern of housing finance which means that the consumption of housing services can differ significantly from their housing expenditures. For a household that stays in the same dwelling over the retirement transition, their consumption of housing services will be roughly constant. However, their typical expenditure on both mortgage principal and interest payments will steadily fall.

In the appendix, a table describing the over 600 different commodity categories available in the HES surveys is presented, with our estimation of whether expenditure on the commodity is influenced by any of the first four retirement-specific factors described above. (Rents and mortgage repayments are excluded separately). These assumptions are summarised in Table 4.

Among couple households with husband over 50, around 17 per cent of current expenditure is spent on commodities that are at least partly work-related. These include transport, eating out and

clothing. Around 7 per cent is spent on health-related expenditures and 12 per cent on commodities where there are significant price reductions for pensioners (who comprise the majority of the retired population). Most health commodities appear in both these groups. We consider that there are a smaller volume of expenditures affected by home production changes (4%, mainly home maintenance, gardening, cooking). Around 7 per cent of expenditures are on commodities where expenditure might be expected to increase.

Of more relevance for the final estimates of costs are the commodity categories where we do not expect to find a direct impact of retirement on expenditure needs. These are summarised in Table 5. The main commodity areas where we think it reasonable to assume that costs are not directly affected by retirement are: food (except eating out and snack food); household furniture, linen and appliances; communication charges; and overseas holidays.

In compiling these lists we have sought to be reasonably restrictive in defining what is specifically related to retirement. For example, in the area of holiday travel, we have included caravans and domestic travel costs as retirement-related as these are part of the (Australian) stereo-typical pattern of becoming a 'grey nomad'. Overseas travel, however, has not been considered retirement specific, as this is common at all ages. One could think of factors both encouraging and discouraging overseas travel after retirement. On the one hand retired people have more time for travel, while on the other, poorer health and higher health insurance costs would discourage it.

Note that we include many household durables (furniture, appliances, electronic goods) in our category of goods that are not directly affected by retirement. If people upgrade these goods in the retirement years with the intention of consuming them in the post-retirement years, this might not be appropriate. However, these patterns of purchases might equally be considered a response to the different income levels in pre and post-retirement, and so our approach would be appropriate.

To put this another way, our estimate of the expenditure needs in retirement will thus be an estimate of the income needed in order to maintain constant expenditures on these classes of goods. If incomes don't, in fact, follow this pattern then shifting expenditures to earlier periods is one way of compensating for this.

Table 4 Expenditure categories directly influenced by retirement

Reductions in work-related costs (17%)

Large effect (10%)

- pre-prepared meals, non-alcoholic beverages, meals out;
- men's suits, trousers, shirts; women's trousers, skirts, dresses, suits, shirts and blouses;
- motor vehicle fuel, oil, tyres, servicing, tolls; public transport;
- union dues.

Smaller effect (7%)

- women's hosiery; ties/gloves/handkerchiefs;
- motor vehicle purchase, registration, insurance, repairs.

Increases in health service consumption (7%)

Large effect (7%)

- home help; hospital, medical and dental insurance (not ambulance);
- doctors' and dentists' fees;
- medicines, ointments, dressings, nursing charges;
- taxi fares, travel insurance.

Price reductions (12%)

Large effect (7%)

- electricity and gas;
- doctors' fees, opticians' fees, prescription medicines, therapeutic appliances;
- hospital and nursing home charges;
- public transport, holiday rail fares;
- health and fitness studio fees, museum/park entrance fees, culture/recreation courses.

Smaller effect (5%)

- non-prescription medicines, entertainment fees, holiday bus fares;
- hair, personal care services.

Home production (4%) (expenditure reductions unless noted)

Large effect (3%)

- paint and house-painting contractors, misc. maintenance contractors and supplies;
- cardigans and pullovers; repairs and cleaning of clothes;
- clothing materials and gardening tools (increase);
- gardening, housekeeping and cleaning services.

Smaller effect (1%)

- cakes, etc., cake mixes, biscuits;
- cooking utensils and other tools (increase);
- plants (increase); animal minding charges.

Leisure expenditure increase (7%)

Large effect (3%)

- purchase and registration of caravan or trailer, domestic holiday expenses;
- golf equipment and fees;
- day trips, culture and recreation lessons; pay TV.

Smaller effect (4%)

- petrol; fishing equipment, health studio charges;
- entertainment.

Notes: See Appendix table for more details. Numbers in brackets are budget shares in 2003-04 (over-50 population as described below). For home production, this is the budget share of commodities with expected expenditure reductions. Some commodities appear in more than one category. Rents and mortgage repayments are not included.

Table 5 Expenditure categories *not* directly influenced by retirement

- house and contents insurance, most repairs and maintenance, loans, body corporate payments
- second dwelling costs
- most foods except eating out, non-alcoholic drinks, cakes and biscuits
- clothing except as specified in work-related in Table 4
- furniture, linen, appliances, utensils, household supplies
- electronic equipment and communication charges
- books, gambling, sports equipment (other than golf)
- non-prescribed pain relievers, sunscreens
- airfares, holiday vehicle hire, overseas holidays
- pets
- personal care (except hair care)
- watches, clocks and other personal expenditures, gifts

4.2 Expenditure data

Data from the two most recent ABS Household Expenditure Surveys (1998-99 and 2003-04) are used to examine household expenditure patterns within these different categories. In order to restrict the analysis to reasonably homogenous population groups, and to avoid complications associated with changing household composition and different wealth levels, attention is restricted to married couple, home-owning households aged 50 and over. More specifically, households are included if they satisfy the following conditions:

- they comprise a married or de facto couple only
- the husband is aged 50 or older
- the couple own their own home (including those with mortgages)
- the bottom and top 3 per cent of households ranked by after-housing income are excluded.¹²

This population is separated into the retired and 'non-retired' using two different criteria:

- *Not in labour force*: Neither partner is in the labour force
- *Husband 65+*: The male partner is aged 65 or more

As noted in the previous section, these are not the only way to define the status of 'retired'. These criteria are used here as they present a simple and unambiguous categorisation of households. Table 6 shows the population size and overlap between the two definitions criteria in the two years. Slightly more households are defined as retired under the labour force definition in both years. However, there are a significant number of households in both non-overlapping cells. In 2003-04, around 17 per cent of couples where the husband was 65 or more had at least one of the couple in the labour force, and around 21 per cent of couples who were not in the labour force had a husband aged under 65 (the overlap is somewhat smaller in 1998-99).

¹² Saunders and Bradbury (2006) provide evidence suggesting that income might not be accurately measured among the bottom 3 per cent of households (ranked by disposable income).

Table 6 Sample size by retirement status, 1998-99 and 2003-04

Either partner in labour force	Husband 65+		Total
	No	Yes	
	1998-99		
Yes	358	63	421
No	111	451	562
Total	469	514	983
	2003-04		
Yes	461	102	563
No	129	483	612
Total	590	585	1175

Notes: Population is home-owner couples with husband aged 50+ (top and bottom 3% of after-housing income excluded).

Table 7 shows the average expenditure patterns and budget shares for the different categories of expenditure listed in Table 4 and Table 5, for retired households under both definitions.

Note that expenditure on housing finance is treated differently to the other goods when calculating budget shares. The objective is to end up with estimates of the extent to which after-housing household income (or non-housing expenditure) needs to increase or decrease so as to maintain living standards constant in retirement. Housing finance expenditure is both very variable between households but also a category of expenditure where individual households are able to make reasonable forecasts of future expenditures. Hence, it is appropriate to treat this as a separate item to be considered after non-housing needs are calculated.

After-housing income is defined as the gross income of the household minus income tax and mortgage payments (for the dwelling in which the couple live), both principal and interest. *Total non-housing expenditure* is defined as total current expenditure on goods and services, minus expenditure on home loan interest repayments (for this dwelling). Note that this is more precisely defined as ‘total expenditure minus housing finance’, as other current housing expenditures such as maintenance and land taxes are not deducted, and mortgage principal repayments are already excluded because they are not included as a current expenditure. *Non-housing saving* (which might be negative) is defined as after-housing income minus total non-housing expenditure.

4.3 Descriptive patterns of expenditure

Table 7 shows the mean expenditures and budget shares of the categories of goods described above for 2003-04. Table 8 has the corresponding information for 1998-99. Goods are characterised according to features that would make the goods specifically dependent upon retirement.

Table 7 Mean expenditures and budget shares, 2003-04

	Husband 65+			Not in labour force			All
	No	Yes	No / Yes	No	Yes	No / Yes	
Mean expenditures (\$/week)							
Non-retirement expenditures	454.6	318.1	1.4	471.4	314.4	1.5	382.5
Work related expenditures (only)	169.1	105.6	1.6	175.3	105.1	1.7	135.6
Both work and leisure related change:	30.5	21.8	1.4	32.5	20.8	1.6	25.9
Both work related and price reduction	2.8	1.1	2.6	3.1	1.0	3.2	1.9
Work total	202.4	128.4	1.6	210.9	126.9	1.7	163.3
Home production (only)	41.1	31.5	1.3	41.8	31.6	1.3	36.0
Health related expenditures (only)	34.5	27.6	1.3	37.9	25.5	1.5	30.9
Both health and price changes	24.3	21.3	1.1	24.8	21.2	1.2	22.7
Health total	58.9	48.9	1.2	62.7	46.7	1.3	53.6
Leisure related expenditures (only)	28.0	28.7	1.0	31.9	25.7	1.2	28.4
Both leisure and price changes	7.1	4.0	1.8	8.0	3.5	2.3	5.4
Leisure total	35.0	32.7	1.1	39.9	29.1	1.4	33.8
Price reductions (only)	60.6	50.5	1.2	63.4	49.1	1.3	55.3
Total non-housing expenditure	852.7	610.1	1.4	890.1	597.8	1.5	724.5
Non-housing savings	44.0	10.5	4.2	116.6	-42.8	-2.7	26.3
Total after-housing income	896.6	620.6	1.4	1006.7	555.0	1.8	750.8
Total housing financing	48.7	2.6	19.1	47.5	6.6	7.2	24.3
Expenditures as % of non-housing expenditure							
(calculated from top panel)							
No Change	53.3	52.1	1.02	53.0	52.6	1.01	52.8
Work	23.7	21.0	1.13	23.7	21.2	1.12	22.5
Home	4.8	5.2	0.94	4.7	5.3	0.89	5.0
Health	6.9	8.0	0.86	7.0	7.8	0.90	7.4
Leisure	4.1	5.4	0.77	4.5	4.9	0.92	4.7
Price	7.1	8.3	0.86	7.1	8.2	0.87	7.6
Total	100.0	100.0	1.00	100.0	100.0	1.00	100.0
Expenditures as % of after-housing income							
(calculated from top panel)							
Non-retirement expenditures	50.7	51.3	0.99	46.8	56.7	0.83	50.9
Work	22.6	20.7	1.09	21.0	22.9	0.92	21.8
Home	4.6	5.1	0.90	4.2	5.7	0.73	4.8
Health	6.6	7.9	0.83	6.2	8.4	0.74	7.1
Leisure	3.9	5.3	0.74	4.0	5.3	0.76	4.5
Price	6.8	8.1	0.83	6.3	8.8	0.71	7.4
Savings	4.9	1.7	2.90	11.6	-7.7	-1.50	3.5
Total	100.0	100.0	1.00	100.0	100.0	1.00	100.0

Notes: Population is home-owner couples with husband aged 50+ (top and bottom 3% of after-housing income excluded). Expenditure categories defined on the basis of any likely retirement effect. Source: ABS HES Survey, 2003-04.

Table 8 Mean expenditures and budget shares, 1998-99

	Husband 65+		No / Yes	Not in labour force		No / Yes	All
	No	Yes		No	Yes		
Mean expenditures (\$/week)							
Non-retirement expenditures	439.7	310.6	1.4	456.4	310.2	1.5	366.3
Work related expenditures (only)	145.0	111.1	1.3	156.0	106.9	1.5	125.7
Both work and leisure related changes	26.3	20.2	1.3	28.0	19.7	1.4	22.8
Both work related and price reductions	2.5	1.4	1.8	2.9	1.2	2.5	1.8
Work total	173.7	132.7	1.3	186.8	127.7	1.5	150.4
Home production (only)	34.8	31.8	1.1	36.6	30.9	1.2	33.1
Health related expenditures (only)	29.1	24.9	1.2	33.9	22.3	1.5	26.7
Both health and price changes	17.5	17.2	1.0	20.0	15.7	1.3	17.3
Health total	46.6	42.1	1.1	53.9	37.9	1.4	44.0
Leisure related expenditures (only)	18.6	20.6	0.9	16.5	21.7	0.8	19.7
Both leisure and price changes	3.7	4.3	0.9	3.9	4.1	1.0	4.0
Leisure total	22.3	24.9	0.9	20.5	25.8	0.8	23.8
Price reductions (only)	56.3	47.1	1.2	59.0	46.1	1.3	51.1
Total non-housing expenditure	773.3	589.3	1.3	813.2	578.7	1.4	668.6
Non-housing savings	-16.1	-61.7	0.3	31.1	-87.5	-0.4	-42.0
Total after-housing income	757.2	527.6	1.4	844.3	491.2	1.7	626.6
Total housing financing	34.4	3.7	9.3	38.5	3.5	10.9	17.0
Expenditures as % of non-housing expenditure (calculated from top panel)							
No Change	56.9	52.7	1.08	56.1	53.6	1.05	54.8
Work	22.5	22.5	1.00	23.0	22.1	1.04	22.5
Home	4.5	5.4	0.83	4.5	5.3	0.84	5.0
Health	6.0	7.2	0.84	6.6	6.6	1.01	6.6
Leisure	2.9	4.2	0.68	2.5	4.5	0.56	3.6
Price	7.3	8.0	0.91	7.3	8.0	0.91	7.6
Total	100.0	100.0	1.00	100.0	100.0	1.00	100.0
Expenditures as % of after-housing income (calculated from top panel)							
Non-retirement expenditures	58.1	58.9	0.99	54.1	63.1	0.86	58.4
Work	22.9	25.2	0.91	22.1	26.0	0.85	24.0
Home	4.6	6.0	0.76	4.3	6.3	0.69	5.3
Health	6.1	8.0	0.77	6.4	7.7	0.83	7.0
Leisure	2.9	4.7	0.62	2.4	5.3	0.46	3.8
Price	7.4	8.9	0.83	7.0	9.4	0.74	8.1
Savings	-2.1	-11.7	0.18	3.7	-17.8	-0.21	-6.7
Total	100.0	100.0	1.00	100.0	100.0	1.00	100.0

Notes: Population is home-owner couples with husband aged 50+ (top and bottom 3% of after-housing income excluded). Expenditure categories defined on the basis of any likely retirement effect. Source: ABS HES Survey, 1998-99. Estimates inflated to \$2003-04 using CPI.

There are some commodities which appear in more than one of the retirement-specific categories. The top panel of each table shows the mean expenditures for all the combinations that occur in the data (and the ratios of the means for retired and not retired – the ‘No/Yes’ columns). The main

overlap is between health and price changes – because a large fraction of the health commodities are also associated with price reductions.

The bottom panel of each table shows budget shares for the six summary categories shown in larger font in the top panel of the table. These summary categories are defined as shown in the top panel by first grouping according to work, then health, then price changes. That is, commodities that might have both work and leisure changes are grouped under work and so on. This means that the “price reduction (only)” category only includes goods which only involve a price reduction for the elderly – in particular health concessions are not included here (they are included under the ‘health total’ category).

Overall, home-owner couples where the husband was aged 50 or over spent an average of \$724.5 per week in 2003-04 (excluding mortgage repayments). This was \$26.3 less than their after-housing income. The spending level of retired households varies depending upon the definition of retirement – but not by a great deal. Those with husband aged 65+ spent \$610.1, some \$10.5 less than their after-housing income. Those with neither person in the labour force had slightly lower expenditures but much lower incomes – implying a dissaving rate of around 8 per cent of after-housing income. Depending on the definition of retirement, the non-retired spent between 1.4 and 1.5 times the amount of retired couples. The ratio for income was similar for the age-based threshold (1.4), but much higher for the labour force criterion (1.8). The picture for 1998-99 is very similar.

Looking at the more detailed commodity categories, the expenditure categories where expenditure falls the most after retirement (ie where the No/Yes ratios are the largest) are ‘both work-related and price reductions’ (mainly public transport) and ‘both leisure and price changes’ (in 2003-04 only) (mainly entertainment). The categories with the smallest fall in expenditures are leisure-related expenditures (mainly holiday-related) and health and price change expenditures (doctors and prescriptions).

Interpreting these patterns is not straightforward. This is because most of the categories include commodities other than those where expenditure patterns might be expected to change after retirement. For example, the commodities grouped under work-related expenditures, which form a very large part of the household budget, include transport costs, but only some of these are directly due to commuting. Hence, the ratio of work-related expenditures is only slightly above the overall expenditure average, thus suggesting that transport costs fall only slightly more than average after retirement. This overall small change no doubt hides a much larger change in that part of transport costs directly attributable to commuting, but this cannot be identified in the data.

The lower two panels of Table 7 and Table 8 show the budget shares calculated from the means shown in the top panel (for the summary expenditure groups). One panel shows these as shares of after-housing income, and the other as shares of after-housing expenditure.

The expenditure share patterns are similar for the two retirement definitions. The share of the budget allocated to goods that are not retirement-specific decreases slightly after retirement (i.e. the No/Yes ratio is > 1), the share allocated to work-related expenditures decreases substantially, and the share devoted to the other retirement-specific goods increases. Interestingly, the share devoted to price reduction (only) goods also increases, even though the price has decreased. This is more a function of the income inelastic nature of these goods rather than their price elasticity. They

mainly comprise utility charges and the like which increase in budget share as total expenditure decreases.

The income share patterns, however, differ substantially between the two retirement definitions. This is because labour force participation has a larger impact on income than does being over 64. The impact on expenditures is relatively small, and so those couples not in the labour force are spending about 8 per cent more than their income in 2003-04 (18% in 1998-99). This, in turn, means that the income budget share of all commodity groups is higher among those couples not in the labour force (other than savings, which is negative).

4.4 The cost (savings) of retirement

Changes in expenditure on retirement-specific goods do not necessarily reflect changes in living standards. Work-related expenditure is not part of household consumption, additional expenditure on health does not imply higher living standards if it is because of greater ill-health, and price reductions might reduce expenditure without changing the quantity of goods consumed.

However, expenditures on the non-retirement goods are not directly biased by such effects. The fact that these expenditures are much lower for the retired than for the non-retired thus provides support for the findings of Barrett and Brzozowski (2009), based on data from HILDA, that average expenditure levels fall after retirement in Australia (the retirement-consumption puzzle). It must be remembered, however, that the data here is not longitudinal and compares different people who are either retired or not retired. Part of the drop in expenditure shown here could thus be because younger cohorts are richer.¹³

Price effects might also contaminate the relationship. More specifically, to use non-retirement expenditure as an indicator of living standards requires the assumption that households have welfare functions that are 'separable' between retirement and non-retirement goods and that there are no important price effects that shift consumption between these two categories. This assumption implies that, for a given set of market prices, the amount spent upon 'non-retirement' expenditures is influenced only by the household's real standard of living. Price changes specific to retirement are assumed not to influence this allocation.

However, many goods become cheaper for the average retired person because of pensioner and seniors' concessions. If this led retired people to switch their expenditure towards these cheaper goods, then it would also lead to a reduction in expenditure on the 'non-retirement' goods, even though the household was no worse off. In this case, it would be wrong to conclude that the reduced expenditure on these goods implied that they were worse off. Again, however, we would expect such effects to be small.

On the above assumption about the separability of retirement and non-retirement goods, the information presented in Table 7 can be used to address the question of how much more (or less) people need in retirement to maintain their pre-retirement standard of consumption. If the amount that people spend on 'non-retirement' goods is used as an indicator of their overall standard of living, then the relative need issue can be addressed by considering the question:

¹³ Even though Barrett and Brzozowski (2009) use panel data, the same caveat applies to their work (which uses a random effects panel estimation approach).

How high would the non-housing expenditure (or after-housing income) need to be in order for the average retired person to spend as much on non-retirement goods as the average non-retired person?

Both after-housing income and non-housing expenditure are considered, because it is not obvious which is the most appropriate policy objective. Income is appropriate because it is most closely related to policy instruments such as pensions. However, it ignores the ability of people to draw down on their wealth to finance their consumption. Expenditure that includes this draw-down is a better indicator of the consumption level of the elderly.

This approach is analogous to the Rothbarth (1943) method used to estimate the costs of children.¹⁴ That method uses expenditure on goods that are not consumed by children as an indicator of the living standard of the adults in the household (both when they do and when they don't have children). Here, the goods that are used are those that are not directly affected by retirement. The key assumptions of the Rothbarth approach (and hence this approach) are that preferences for adult consumption (in this case, non-retirement consumption) are stable across the life cycle, that 'adult goods' (in this case non-retirement goods) are indeed that, and that there are no distorting price effects (such as changes in consumption due to concessions).

If we also assume that expenditure on non-retirement goods is always a constant proportion of income (or of total expenditure), this question can be answered from the data presented in Table 7. Let x_t be expenditure on non-retirement goods and y_t be income (or total expenditure) for household t . For non-retired households, let $x_t = \alpha^0 y_t$ and for retired households, $x_t = \alpha^R y_t$, where the α parameters are the budget shares for the non-retirement goods shown in Table 7. Denote the average expenditure on non-retirement goods for the non-retired person as $\bar{x}^0 = \alpha^0 \bar{y}^0$ and for the retired person as $\bar{x}^R = \alpha^R \bar{y}^R$. Equating these yields $\alpha^0 \bar{y}^0 = \alpha^R \bar{y}^R$. So consumption of non-retirement goods will be equal when

$$\frac{\bar{y}^R}{\bar{y}^0} = \frac{\alpha^0}{\alpha^R}$$

That is, the ratio of budget shares shown in bold in Table 7 shows the relative after-housing income (or total non-housing expenditure) required in retirement to maintain consumption of that good.

These ratios based on budget shares are in fact very close to one. This means that the average retired couple needs to have the same *total* household expenditure as the average non-retired couple in order to maintain the same level of *non-retirement* expenditure. Reductions in expenditure associated with reduced work-related costs are offset by increases due to changed health and leisure expenditure.

The conclusions based on income shares using labour force status to define retirement are, however, somewhat different. Because couples out of the labour force are drawing upon their savings, they need only 83 per cent of the after-housing income of couples still in the labour force.

¹⁴ See Deaton Muellbauer (1986) for more discussion of the Rothbarth approach.

However, these conclusions derived from Table 7 depend upon the assumption that expenditures on the non-retirement goods are a constant fraction of total expenditure or income (within each retirement category). In fact this is not the case. Non-retirement goods tend to be necessities, with lower-income households spending a much larger proportion of their budget on these goods. This lower income-elasticity (around 0.5), together with the lower average income of the retired, means that they may need to have a substantially larger increase in total income in order to reach the same level of expenditure they had prior to retirement. To make this point another way, part of the reason why retired households have relatively high budget shares for the non-retirement goods in the tables above is because they have a lower average living standard. The question we wish to answer here, however, is how much they would need in order to attain the same living standard as non-retired households.

To estimate this, it is necessary to take account of the changing budget share of non-retirement goods across the income distribution. This is done by estimating a quadratic relationship between the logarithm of expenditure on non-retirement goods and the logarithm of after-housing income (or non-housing expenditure).¹⁵

$$\text{Log } x_t = \alpha + \beta \log y_t + \gamma R_t + \delta R_t \log y_t + \epsilon (\log y_t)^2 + \mu R_t (\log y_t)^2 + e_t \quad (1)$$

Where $R_t = 1$ if the household is classed as retired, 0 otherwise, and e_t is an independent random error term of mean zero. Then expected expenditure on the non-retirement goods for retired and non-retired households will be equal when

$$\alpha + \beta \log y_R + \gamma + \delta \log y_R + \epsilon (\log y_R)^2 + \mu (\log y_R)^2 = \alpha + \beta \log y_0 + \epsilon (\log y_0)^2$$

where y_0 is the income level for a non-retired household and y_R the income for the retired household. For a specified value of y_0 this equation is a quadratic in $\log y_R$ with solutions given by

$$\log y_R^\pm = \frac{-(\beta + \delta) \pm \sqrt{(\beta + \delta)^2 - 4(\epsilon + \mu)(\gamma - \beta \log y_0 - \epsilon (\log y_0)^2)}}{2(\epsilon + \mu)}$$

The ratio of the retirement to non-retirement income is thus given by

$$E^\pm = \frac{y^R}{y^0} = \exp(\log y_R^\pm - \log y_0)$$

Equation (1) is estimated using the two definitions of retirement and using either income or total expenditure on the RHS of the equation. After estimating the regression parameters, E is calculated for values of y_0 at \$480/week, \$770/week and \$1,080/week. These correspond approximately to the 25th, median and 75th percentiles of income for couples where the husband was under 65 in 2003-04. In general, the above equation implies up to two solutions for E – though one of these always implies a value for y_R outside the bounds of our data, which we ignore.

¹⁵ The log form is used so as to reduce heteroscedascity. The constant budget share case can be estimated by fixing $\beta = 1$ and $\delta = \epsilon = \mu = 0$. This yields estimates which imply results very similar to those implied by Table 7 and Table 8.

The results of this regression are shown in Table 9. This table shows the relative after-housing income (or non-housing total expenditure) required by a retired couple in order for them to have the same expenditure on non-retirement goods as a non-retired couple. More specifically, consider the top-left estimate of 1.36. This implies that, if a couple with at least one member in the labour force has an after-housing income of \$480 per week, then a couple with no members in the labour force requires an after-housing income 36 per cent higher in order for them to spend the same amount on non-retirement goods.

Table 9 **Estimates of the relative needs of retired couples**

Retirement definition		After-housing income or expenditure level of non-retired couples					
		\$480/week		\$770/week		\$1,080/week	
		Estimate	Standard error	Estimate	Standard error	Estimate	Standard error
Income							
Not in the labour force	1998-99	1.36	0.13	1.11	0.11	1.00	0.12
	2003-04	1.54	0.17	1.24	0.12	1.08	0.11
Husband 65 +	1998-99	1.45	0.12	1.34	0.24	1.36	0.51
	2003-04	1.57	0.15	1.35	0.13	1.22	1.22
Expenditure							
Not in the labour force	1998-99	1.04	0.04	1.08	0.06	1.14	0.08
	2003-04	0.97	0.02	1.01	0.03	1.11	0.08
Husband 65 +	1998-99	1.12	0.04	1.15	0.06	1.16	0.07
	2003-04	1.02	0.03	1.05	0.03	1.09	0.06

Notes: Source, ABS HES surveys, 1998-99 and 2003-04. Weighted data. Standard errors calculated using the ABS replication weights and jackknife method.

Particularly at the lower end of the income scale, all the ratios for both survey years and both retirement definitions are well above one,¹⁶ implying that retired couples need higher after-housing incomes than non-retired couples. The ratios are generally higher in 2003-04 than 1998-99, but these differences are not statistically significant. The ratios decline steeply as income increases when using the labour force definition of retirement, but decline only a small amount when using the age-based definition.

The estimates in the second panel of the table, based on expenditure, are not as large, but almost all are above one. These estimates show how much total non-housing expenditure retired households need in order to reach the same level of non-retirement spending. We are less confident of these estimates in the second panel, as they might be biased by the endogeneity of total expenditure. That is, any transitory shocks to non-retirement expenditure will also be included in total expenditure. This will tend to increase the apparent relationship between non-retirement expenditure and total expenditure, but it is not clear in which direction it will bias the relativity estimate. In future work, we will explore the use of instrumental variable approaches to control for this.

5 Conclusions

There is strong evidence that income and expenditure fall with the transition to retirement. This report's conclusions on how households cope with this, however, are mixed.

¹⁶ And statistically significant. Approximate 95% confidence intervals can be estimated as ± 2 standard errors.

On the one hand, the results of the previous section suggest that, in order to be able to maintain their level of commodity consumption, couples who retire need to increase (or at least maintain) their previous level of income (after deducting housing costs). In fact, however, they decrease their income and expenditure. This apparent decrease in consumption has been described as the ‘retirement consumption puzzle’.

The fact that households do not in fact maintain their income and expenditure suggests that they should be dissatisfied with their financial situation and more likely to report financial hardship. For the most part, however, this is not the case. Financial satisfaction increases and experience of financial hardship decreases – though many retirees do say that their income in retirement is less than they expected it to be. We might call this result the ‘retirement satisfaction puzzle’.

Explanations for this disjuncture stem from the interpretation of either the satisfaction or consumption measures. On the one hand, expectations might be low because people acclimatise to low living standards. This could be due to either cohort experience or because people base their expectations on the experience of other people in similar situations (i.e. other retirees). Similarly, the older population might have less income volatility and hence fewer financial stress events, and yet still have a relatively low standard of living.

On the other hand, writers such as Barrett and Brzozowski (2009) argue that the fall in expenditure pattern after retirement is offset by other factors – such as reduced work-related expenditure and increases in home production.

Our evidence on expenditure patterns does not support this conclusion. We focus on expenditures which we judge to be not directly affected by retirement in this fashion and find that they too fall after retirement – implying a fall in real living standards. Another empirical difference is that Barrett and Brzozowski (2009) focus on the impact of retirement while holding age constant, while we focus on the combined impact of these two factors. We argue that the latter is the more relevant comparison for policies associated with consumption maintenance in retirement.

Nonetheless, it might be the case that our definition of ‘non-retirement’ goods is open to question, with some goods that we include under this rubric being, in fact, directly tied up with retirement patterns. For example, we include most foods as non-retirement goods, only excluding those that clearly have a large home production element. The natural next stage for this research, therefore, will be to disaggregate the non-retirement goods and to formally test whether the different sub-categories of goods point to the same patterns of relative needs in retirement.¹⁷

6 References

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¹⁷ The framework used in the cost of children literature can be used to undertake formal tests of these hypotheses. See Deaton, Ruiz-Castillo and Thomas (1989).

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7 Appendix

Table 10 HILDA sample: Number of individuals included in sample by maximum observed age

Age	Male		Female	
	N	%	N	%
45-59	2092	54.2	2218	52.4
60-75	1241	32.1	1304	30.8
>75	530	13.7	712	16.8
	3863	100.0	4234	100.0

Table 11 HES sample: Characteristics

	HES 98-99	HES 03-04
Number of households (unweighted)	983	1175
	%	%
Age groups		
50-64		
Male	43.7	45.2
Female	56.3	54.8
>65		
Male	57.6	56.6
Female	42.4	43.4
Wife work status		
Employed	30.0	34.5
Unemployed	0.9	0.8
Out of the L force	69.1	64.7
Husband work status		
Employed	37.4	41.2
Unemployed	1.6	0.7
Out of the L force	61.0	58.1
Husband - Education		
Bach degree or postgrad degree	9.9	13.8
Diploma	8.1	7.8
Vocational qualification/Certificate or other qualification	34.4	33.2
No qualification	47.7	45.1
Wife - Education		
Bach degree or postgrad degree	6.7	12.1
Diploma	7.0	8.3
Vocational qualification/Certificate or other qualification	16.9	18.4
No qualification	69.4	61.3