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RETIREMENT INTENTIONS OF MATURE AGE WORKERS

**Paper for the Australian Social Policy Conference to be held 9 – 11 July 2003
at the University of New South Wales**

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The author wishes to acknowledge the helpful comments received from colleagues in the Department, particularly those of Alex Dolan, Allison Barnes and Leo Bild. The views expressed in this paper are those of the author and do not necessarily represent the views of the Department of Family and Community Services. They cannot be taken, in any way, as expressions of government policy.

Unless otherwise specified all tables and graphs use data from the Household Income and Labour Dynamics in Australia survey.

TABLE OF CONTENTS

1.	Introduction	4
2.	The HILDA Sample	6
3.	Factors Affecting Intended Retirement Age	7
	3.1 Gender and Marital Status	7
	3.2 Children	7
	3.3 Occupation and Type of Work	8
	3.4 Education	8
	3.5 Home-ownership	8
	3.6 Retirement Income	9
	3.7 Current Income	10
	3.8 Immigrants	11
	3.9 Employment Conditions	11
	3.10 Retirement Intentions of Partner	13
4.	Intended Retirement Age compared to Actual Retirement Age	16
5.	Factors Affecting the Decision to Retire	17
	5.1 Forced Retirement	17
	5.2 Voluntary Retirement	18
6.	Regression Analysis of Intended Years to Retirement	20
7.	Conclusions	22
	Appendix – Results of Regression Analysis	23
	Regression 1	23
	Regression 2	24
	References	26

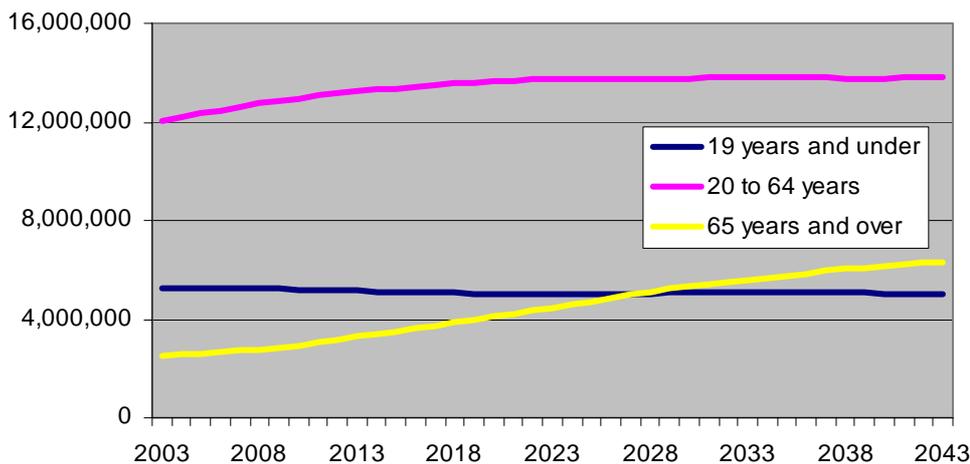
1. Introduction

This paper has been written against a backdrop of the ageing of Australia’s population which has been widely discussed and well documented. A large number of people were born in the years after the second World War when the fertility rate jumped from 2.2 in the early forties to 3.6 by 1961. People born between 1946 and 1964, commonly referred to as the “baby boomers”, are now approaching retirement and their retirement aspirations are of significant policy interest.

There will be a greater capacity for self-provision in retirement in the next few decades, as a result of the maturing of the superannuation system. Those who have had a strong attachment to the workforce after the mid-1990s will accumulate sufficient savings to markedly affect their standard of living in retirement. However, for many who will retire in the next couple of decades, savings from superannuation will be low, as the system was introduced late in their working lives. Therefore, the retirement income system confronts the twin problems of a rapid increase in numbers of people of age pension age, as well as there being a large proportion of them without significant income-producing savings¹. This will occur at a time of structural ageing, that is when the proportion of the population who are younger is declining. This change in population structure will gradually slow the growth in the overall size of the workforce age population² to about zero from around 2020 (see chart 1).

The increased burden on the public purse of the age pension will be further exacerbated by the escalating cost of health care associated with an ageing population. The management of this structural ageing, particularly the extent to which people maintain their attachment to the workforce as they get older, will present a challenge for current and future governments.

Chart 1. Population projections, Australia



Source: ABS 3222.0 series II

¹ According to the NATSEM Income and Wealth Report 2002, the average equity in owner occupied housing by 50 to 64 year olds was \$127,000, while deposits, equities, rental properties and superannuation accounted for \$113,000 in total.

² For the purpose of this paper working age population is 20 to 64.

While not all people retire when they intend to, for some the intended retirement age will determine when attachment to the workforce ceases. This paper will examine the retirement plans of people aged 45-54 years (people born between 1947 and 1956), using *Wave 1*³ data from the *Household, Income and Labour Dynamics in Australia Survey (HILDA)*. The paper will explore this cohort's intended retirement age and how various factors such as gender, occupation, income, home-ownership and retirement intentions of spouse affect the planned timing of their retirement.

The HILDA Survey is a household-based panel survey, which aims to track all members of an initial sample of households over an indefinite life⁴, by interviewing them each year. The wave 1 sample included 13,969 persons from 7,682 households from a diverse range of localities around Australia. At the time of this paper, only data from wave 1 was available, hence the cross-sectional nature of this study. In years to come, it will be possible to undertake a longitudinal study of people in this cohort to see how closely their expected retirement age matches their actual retirement age and to see if the timing of their intended retirement changes over time.

The findings from the analysis of the HILDA data will be augmented using results from the *Workforce Circumstances and Retirement Attitudes Survey*⁵ to consider the factors affecting their retirement decision and assess how people's level of superannuation and other savings might affect their retirement decision.

³ Wave 1 of HILDA was conducted between August 2001 and January 2002.

⁴ As at June 2003, HILDA was funded to Wave 4, which is to be undertaken in 2004.

⁵ Undertaken by The Wallis Consulting Group in 2000 on behalf of FaCS.

2. The HILDA Sample

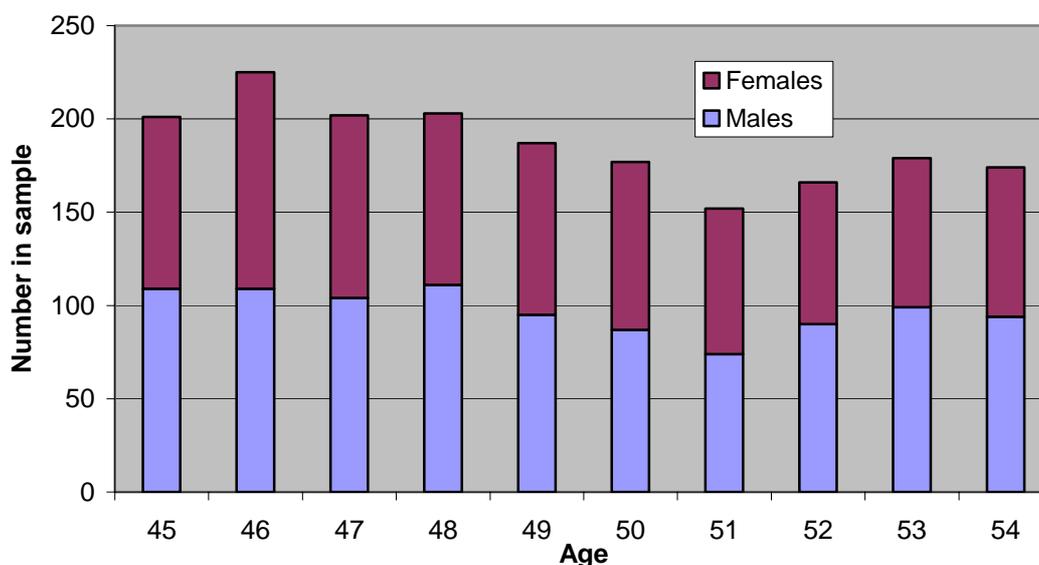
There were 2,428 people in the 45 to 54 year age range, of which 1,870 (or 77.0%) were in paid employment at the time of the survey. All but 4 persons (i.e. 1,866 in total), answered the question, “At what age do you plan to retire (completely) from the workforce?” When weighted, the sample of 1,866 represented 2,040,649 people, of which:

- 135,638 (or 6.6%) said they do not intend to retire;
- 504,642 (or 24.8%) said they did not have any plans at this stage.⁶

The remainder (1,400,369 or 68.6%) were able to estimate an age at which they plan to retire. The 6.6% who said they would never retire were allocated an intended retirement age of 67 (the 90th percentile of retirement age of retirees⁷), in recognition that although they may retire later than average, they will retire eventually.

Chart 2 shows that the sample is fairly representative of the population in terms of gender and age.

Chart 2. Age and gender profile of sample



According to HILDA, the estimated average intended retirement age of those aged 45 to 54 was 60.5. It can be said with 95% certainty that the actual intended retirement age for this age group was between 60.2 and 60.8. Throughout this paper, results will be considered statistically significant only if there is 95% certainty.

⁶ Throughout the paper these people were excluded from all calculations of average intended retirement age. Unlike those that said they would never retire where we assumed they will retire later than average, it is difficult to make any assumptions about a person who doesn't know when they are going to retire or has no plans.

⁷ 90% of retirees had retired by the age of 67 for both males and females.

3. Factors Affecting Intended Retirement Age

3.1 Gender and Marital Status

On average, males planned to retire at age 61.4, significantly later than females who intended to retire at 59.3. For those who were partnered, the difference was slightly greater, 61.3 for males compared to 58.6 for females. This is partly explained by partnered females being about 1.5 years younger than their partners in this age group and the premise that their retirement occurs together. There is a tendency for retirement of each partner to coincide to some degree, which will be explored later in this paper.

For those who never married or were divorced, separated or widowed, there were some slight differences in intended retirement age by gender, but these variations were not statistically significant.

Intended Retirement Age by Gender and Marital Status

	Male	Female	All persons
Partnered	61.3	58.6	60.2
Divorced, Separated, Widowed	62.6	61.5	62.0
Never married	61.1	62.3	61.7
All persons	61.4	59.3	60.5

The average intended retirement age for those who were partnered was 60.2, lower than the average of 62.0 for divorced, separated and widowed persons. The difference between those partnered and never married was not statistically significant. However, analysing females in isolation, the average intended retirement age of 62.3 for those never married was much higher than 58.6 measured for their partnered counterparts.

3.2 Children

Generally, whether a person had children or how many children they had had no bearing on their intended retirement age⁸. One exception was for divorced, separated or widowed females. If they were a parent, on average they intended to retire at 61.9, a much older age than for those that were childless (57.2).

The age of the youngest child had a slight impact on intended retirement age in that the younger the age of the youngest child, the later the parent planned to retire. The significance of the effect of this difference will be explored by regression analysis later in this paper.

⁸ Number of children is defined as how many living children a person has ever had regardless of their living arrangements.

3.3 Occupation and Type of Work

Analysis by broad occupation type showed no significant differences in intended retirement age, although for males, there were significant differences depending on whether they were employed in the private or public sector. On average, males in the private sector intended to retire at 61.9 compared to 59.7 in the public sector. The difference is possibly attributable to the relatively generous provisions of public service superannuation schemes. Although not statistically significant, the average intended retirement age of tradespersons was slightly higher than all other occupation types.

Intended Retirement Age by Gender and Type of Employer

	Males	Females	All persons
Private Sector	61.9	59.1	60.8
Public Sector	59.7	59.5	59.6
All persons	61.4	59.3	60.5

3.4 Education

The average intended retirement age of university-educated people was 61.3, slightly higher than those without a university education (60.2). The difference was more pronounced for females, with those university-educated intending to retire at 60.3, while those without averaged 58.8 years. Looking at males in isolation, differences existed, but they were not statistically significant.

Intended Retirement Age by Gender and Education

	Males	Females	All persons
University educated	62.1	60.3	61.3
Non-university educated	61.1	58.8	60.2
All persons	61.4	59.3	60.5

3.5 Home-ownership

On average, those who owned their home (either owning it outright or paying it off), intended to retire at age 60.2 compared to 62.4 for those who either rented or lived free with someone else. Similar differences were observed for both males and females.

Owing money on one's home increased the average intended retirement age only slightly and it was not statistically significant. The size of the mortgage also had no significant effect on intended retirement age, nor did the amount of equity in the home.

Intended Retirement Age by Gender and Homeownership

	Males	Females	All persons
<i>Homeowner - own outright</i>	60.8	58.7	59.9
<i>Homeowner - paying off</i>	61.4	59.4	60.6
Homeowner - total	61.1	59.0	60.2
Non-homeowner	63.4	61.0	62.4
All persons	61.4	59.3	60.5

3.6 Retirement Income

While Wave 1 of HILDA does not provide information on expected retirement income, the Workforce Circumstance and Retirement Attitudes (WCRA) survey provides some information on expected income and assets at retirement such as expected superannuation payout, expected level of savings and expected size of pension.

When asked what means of financial support they expected to receive in retirement,

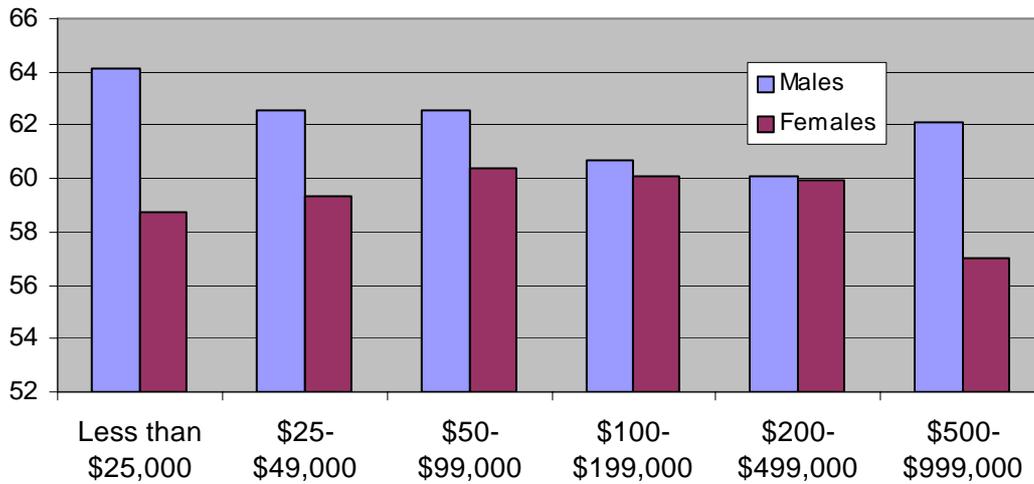
- 36% indicated a lump sum superannuation pay out;
- 31% indicated a pension from their employer and/or a purchased pension;
- 64% planned to rely partly or completely on Government benefits; and
- 38% intended to rely on other savings.

Obviously, with these percentages adding up to more than 100%, some expected to draw on a combination of income sources.

The WCRA survey shows, for males, if we exclude those who expected to receive over \$500,000, the higher they expect their pay out to be, the earlier they intended to retire (see Chart 3)⁹. For females, it appears that the higher they expect their pay out to be, the later they intend to retire (ignoring those expecting to receive over \$500,000), however the differences were not statistically significant.

⁹ Average intended retirement age in WCRA was determined by asking “At what age do you think you will retire?” This gave similar (although slightly higher) estimates of 62.4 years for males and 59.8 years for females.

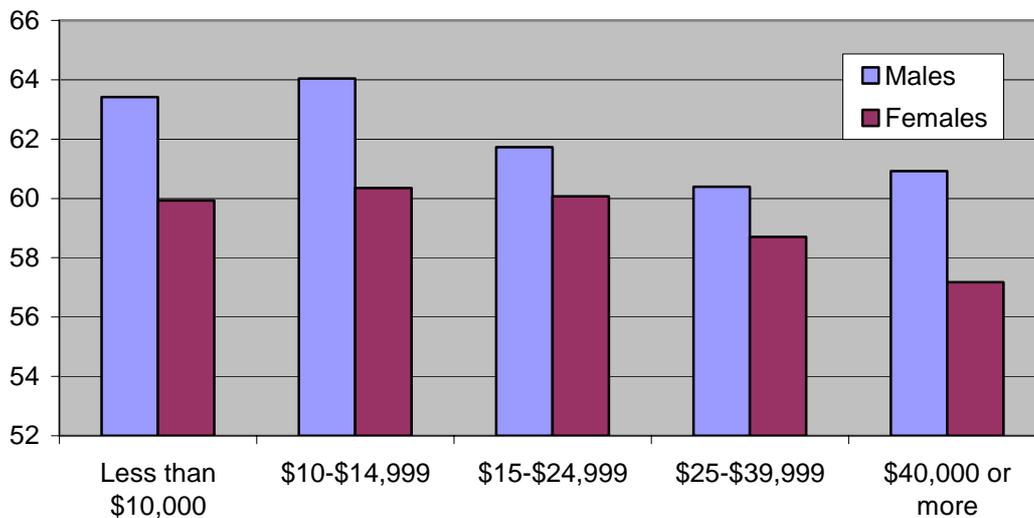
Chart 3. Intended retirement age by expected super payout



Source: WCRA 2000

For both males and females planning on receiving a pension other than the age pension¹⁰, generally the larger the expected pension, the earlier the planned retirement age.

Chart 4. Intended retirement age by expected private pension income



Source: WCRA 2000

3.7 Current Income

The HILDA data shows that other than a slight tendency for men on higher incomes to want to retire earlier than those on lower incomes (which was not statistically significant), the income of the individual had little effect on average intended retirement age. Perhaps there are two countervailing effects on intended retirement age occurring. One being the higher your income, the greater your opportunity for

¹⁰ Either employer-provided or purchased pension.

savings and therefore the earlier you can afford to retire. The second being, the higher your income, the greater your attachment to the workforce. Also, those on higher incomes are more likely to be university-educated. HILDA suggests that this increases their propensity to wish to retire later.

Although no significant link exists between an individual's income and intended retirement age, there is a strong relationship between income and whether the individual has plans regarding when they wish to retire. It is apparent that those on higher incomes have clearer intentions on when they want to retire, perhaps because they are better informed. The difference is particularly noteworthy for females, where only 13% of those earning over \$60,000 had no plans, while 40% of those earning under \$20,000 had no plans.

Percentage who have no plans on when they will retire, by current income

	Males	Females	All persons
less than \$20,000	33%	40%	37%
\$20,000 to \$39,999	19%	27%	24%
\$40,000 to \$59,999	18%	24%	20%
\$60,000 and over	15%	13%	14%
All persons	20%	30%	25%

The majority of the 45 to 54 year age group are partnered, therefore it is appropriate to analyse what effect the household income has on intended retirement age. The impact of household income will be examined in the regression analysis later in the paper.

3.8 Immigrants

According to HILDA, over 28% of the 45 to 54 year olds in Australia were born overseas. Migrants in this age group typically have resided in Australia for the majority of their working life, with 69% moving here by the age of 30. There was no significant difference between the average intended retirement age of migrants and the preferences of those born in Australia.

3.9 Employment Conditions

Employment conditions such as flexibility of hours, a stress-free workplace and availability of permanent part-time work play an important role in job satisfaction. This satisfaction may impact on when a person intends to retire. If given the choice, a worker may extend their working life if their work conditions were favourable.

Respondents were asked how strongly they agreed with the statement, "I have a lot of freedom to decide when I do my work". For males, 44% agreed with this statement, while 42% disagreed. For females, only 36% agreed that they had freedom of working

hours, while 54% did not agree¹¹. For males, on average, those that strongly agreed with this statement (about 14% of the total) intended to retire at 63.4, significantly higher than the average for all males of 61.4. The same relationship for females did not hold.

Average Intended Retirement Age

	Males	Females
For those who strongly agreed with the statement, "I have a lot of freedom to decide when I do my work" (those with flexible jobs)	63.4	59.3
For those that strongly disagreed with the statement, "My job is more stressful than I ever imagined" (those least stressed)	63.0	59.8
Permanent part-time work available	61.8	59.3
All persons 45 to 54 (HILDA)	61.4	59.3

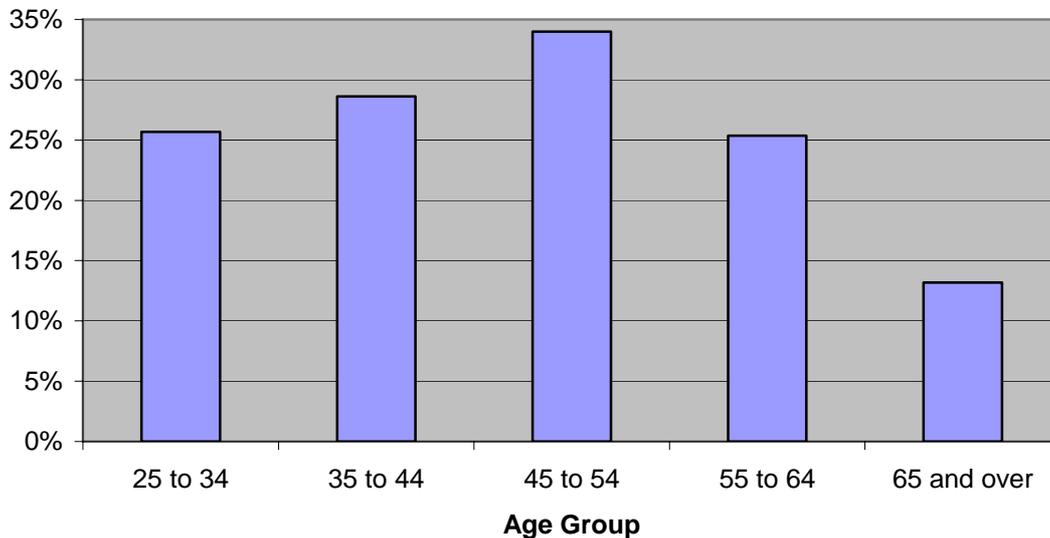
When asked how strongly they agreed with the statement, "My job is more stressful than I had ever imagined", males were slightly more likely to agree, with 34% supporting this statement and 45% not. For females, only 31% agreed with the statement and 50% did not.

Males who strongly disagreed with the statement (i.e. those that were least stressed), accounted for 13% of all males in this age group. They planned to retire at 63.0, a later retirement age than the average male in this age group. The same analysis for females showed nothing significant.

Looking beyond the 45 to 54 year age group, as shown by Chart 5, those males working beyond 54 were less likely to state their job was stressful. Perhaps this is partly due to less work-family balance issues than their younger counterparts, but also it could be because those in the stressful jobs either left the workforce or changed to a less stressful job in their later working life.

¹¹ Respondents were allowed to say they neither agreed nor disagreed, hence the percentages not adding up to 100%.

Chart 5. Proportion of working males who agreed to some extent with the statement, “My job is more stressful than I ever imagined.”



There was a slight tendency for both males and females to plan to extend their working life if permanent part-time work is available to them, but it was not statistically significant. Wave 3 of HILDA, to be completed in 2003, will include a module on transitional retirement. Results from this module will help determine the extent that part-time work is used as a vehicle to full retirement.

3.10 Retirement Intentions of Partner

It is a widely held view that for those who are partnered, decisions regarding retirement are made jointly with their partner. While they may not intend to retire at the same age, it is hypothesised that they retire at approximately the same time. For partnered people who were both working, HILDA indicates that there was some tendency for people to intend to retire at the same time as their partner. Chart 6 shows that 40% of males intend to retire within 2 years of their partner, while 69% intend to retire within 5 years of their partner.¹²

¹² Logically, the equivalent analysis for females would give the same results. Those whose partner has already retired or never worked are not included in this analysis.

Chart 6. Distribution of partnered males – years between own retirement and partner’s retirement

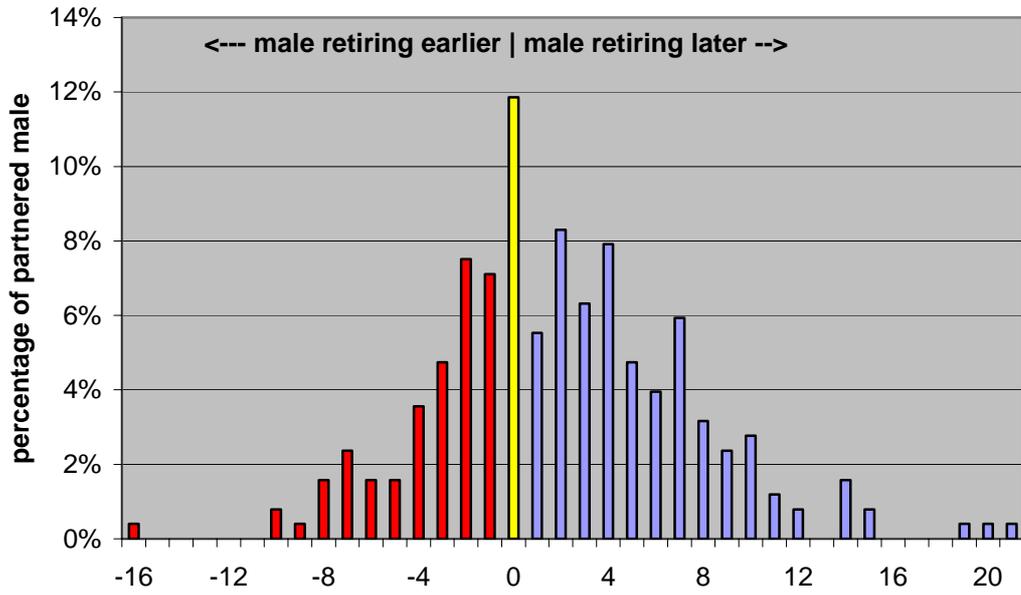


As shown earlier, partnered males intend to retire at an older age than partnered females (61.3 compared to 58.6). This is partly explained by the fact that often the male in a partnership is older than the female. However, it is also true that the female intends to retire at a slightly earlier point in time. Chart 7 shows that 12% of males plan to retire in the same year as their partner. Of those males where the intended retirement age differs from their partner’s, 64% plan to retire later.

Given each member of the couple was asked the intended retirement question independently and for most there is some level of estimation involved, it is not surprising that their time of retirement did not precisely coincide, even if there was an intention to retire together. This might be due to the question seeking an age of retirement, not a date or a year (eg “I think I will retire when I am about 60”). If we accept that those who intend to retire within 2 years of each other intend to retire at the same time, then 60% of partnered males intend to retire at a time that does not coincide with their partner. Of these, 72% of males intend to retire later than their partners, or when retirement of partners does not coincide, the male is approximately two and half times more likely to retire later.

Characteristics of females who intend to retire earlier than their partners were examined briefly. They are slightly more likely to come from households with higher than average incomes, but this was not statistically significant.

Chart 7. Partnered males – years between own retirement and partner’s retirement



4. Intended Retirement Age compared to Actual Retirement Age

According to ABS data¹³, in 1997, for those who retired after the age of 45, the average *actual* retirement age for males and females was 60.0 and 55.9 respectively¹⁴ (compared to the average *intended* retirement age of 61.4 and 59.3 derived from HILDA). This would suggest that the average intended age of retirement for males is reasonably close to that actually occurring, while this might suggest that females retire significantly earlier than they originally expect.

However, it is worth noting that the *actual* retirement age from ABS is backward looking (retirement of respondents occurring some time previous to 1997), while the *intended* retirement age from HILDA is forward looking (average intended year of retirement of target group is 2013). During the last few decades, the participation rate for females over 45 has increased dramatically. Also, almost all the women who retired prior to 1997 would have been eligible for the age pension five years earlier than their male counterparts. These two factors help explain the difference between *actual* and *intended* retirement ages for females. The increased attachment to the workforce of mature-age females coupled with the gradual increase of the age pension age for females to match that of males¹⁵ will probably increase the *actual* retirement age of females in the future, bringing it closer to the average *intended* retirement age estimated by HILDA.

ABS data shows that over the past decade, females are intending to retire later and males slightly earlier. Importantly, the gender gap is getting less over time. Although not a perfect indicator, this does show a narrowing of the age difference by gender.

Intended Retirement Age by Gender

		Males	Females	Difference
ABS 6238.0	October 1992	62.8	58.9	3.9
	November 1994	62.7	59.1	3.6
	November 1997	62.3	59.5	2.8
HILDA	October 2001	61.4	59.3	2.1

Source: Derived from ABS 6238.0 table 13

It should be noted that ABS estimates include the intended retirement of non-retired people aged over 54, while HILDA does not. This will cause the ABS estimates to be slightly higher than the HILDA estimate.

¹³ Retirement and Retirement Intentions, 6238.0, November 1997, table 5

¹⁴ This is an average of all those people retired after the age of 45.

¹⁵ This will occur on July 1 2013.

5. Factors Affecting the Decision to Retire

Although it would appear that actual timing of retirement comes before many intend, this could mask contrasting experiences. Some studies have claimed that workers who get laid-off late in their working life may find it very difficult to find further employment, particularly if they do not have transferable skills or have not been retrained (Wallis, 2000). Other studies have shown that the expectations of financial security in retirement of people approaching retirement far exceeds the resources that will be available to them at their intended retirement date (Cameron, 2001). If the recent negative or lean returns experienced by superannuation funds continue, the average lump sum may be less than expected and may be considered inadequate at the desired time of retirement. However, it would appear that at present factors causing earlier than expected retirement are outweighing those that cause workers to extend their working life.

5.1 Involuntary Retirement

The WCRA survey asked those that had retired how strongly they agreed with the following statement:

“I would like to still be working.”

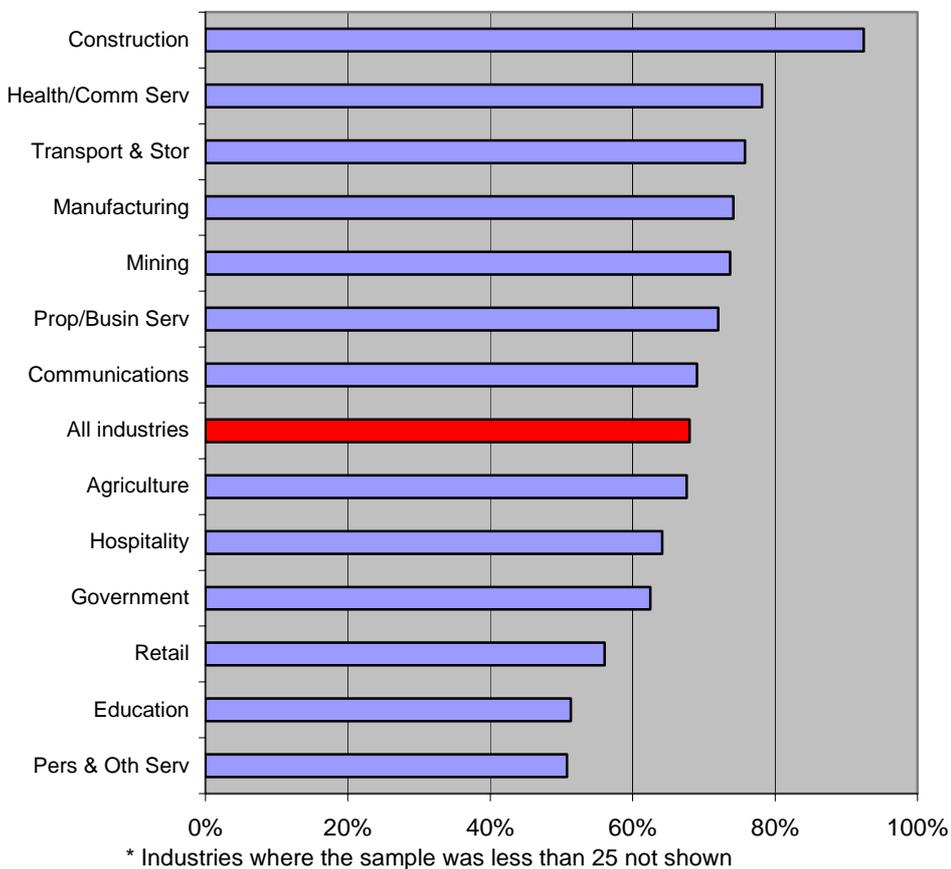
Although some retirees who had originally retired voluntarily now wished they were still working (12%), most disagreed with the above statement.

Approximately 65% of males and 62% of females who retired before the age of 60 did so involuntarily¹⁶. Of these, about 24% agreed that they would like to still be working. Logic suggests that when compared to voluntary retirees, this group not only were more likely to want to be working, but were more likely to have retired before they intended to, and perhaps retirement was forced on them fairly suddenly.

The WCRA shows the likelihood of retiring involuntarily varies depending on the industry the person was working in. As shown in Chart 8, approximately 92% of all those who last worked in the Construction industry retired involuntarily. Working in the Health and Community Services or the Transport and Storage industries also increased your chances of retiring involuntarily (78% and 76% respectively retired involuntarily). In contrast, working in the Personal and Other Services or the Education industries significantly reduced the chance of involuntary retirement, where 51% were forced into retirement in each industry.

¹⁶ Includes those who had circumstances that made it difficult for them to continue working such as illness, caring responsibilities, as well as retrenchment, redundancy, company closed down, etc

Chart 8. Proportion of people who retired before age 60 who retired involuntarily¹⁷, by industry*



Source: WCRA

5.2 Voluntary Retirement

The WCRA survey also asked those who had retired how strongly they agreed with the following statement:

“I retired as soon as I could afford to”

If we look at those who retired at a time of their own choosing, and were not forced into retirement by retrenchment, illness, caring responsibilities or any other involuntary reason (approximately one-third of retirees), not unexpectedly, we find a general agreement with the above statement. For males who retired voluntarily, the younger they retired, the more likely they were to agree with this statement. For females, there was little relationship between retirement age and propensity to agree with this statement.

¹⁷ see footnote previous footnote

Approximately 35% of males and 38% of females who retired before the age of 60 did so voluntarily. Of these voluntary retirees, about 65% of these males, either strongly agreed or agreed with the above statement. Only 44% of females in this age group who chose to retire were in agreement with the statement. This would suggest that for females, other factors are more likely to come in to play when determining their time of retirement.

For males at least, given that more than half of those who retired voluntarily did so when they could afford to, it could be argued that a lower than expected lump sum will delay their retirement. Hence their *actual* retirement age could begin to exceed *intended* retirement age if superannuation funds continue to yield negative or low returns in the coming years as retirees increase their reliance on their lump sum to fund retirement.

In summary, the majority of retirees were forced into retirement (65%). It is clear that a significant minority wished they were still working, even when asked many years after losing their job. The actual retirement of these people occurs before they originally intended.

On the other hand, *actual* retirement will probably occur after *intended* retirement age for a minority of workers that have full control over when they retire, as many decide to retire only when they can afford to. For some, access to their lump sum or pension will greatly impact on whether they can afford to retire, and for those who have access, performance of their superannuation fund may dictate how soon they leave the workforce. Should the current low returns on superannuation persist over a long period, a tendency toward later retirement may occur for some.

6. Regression Analysis of Intended Years to Retirement

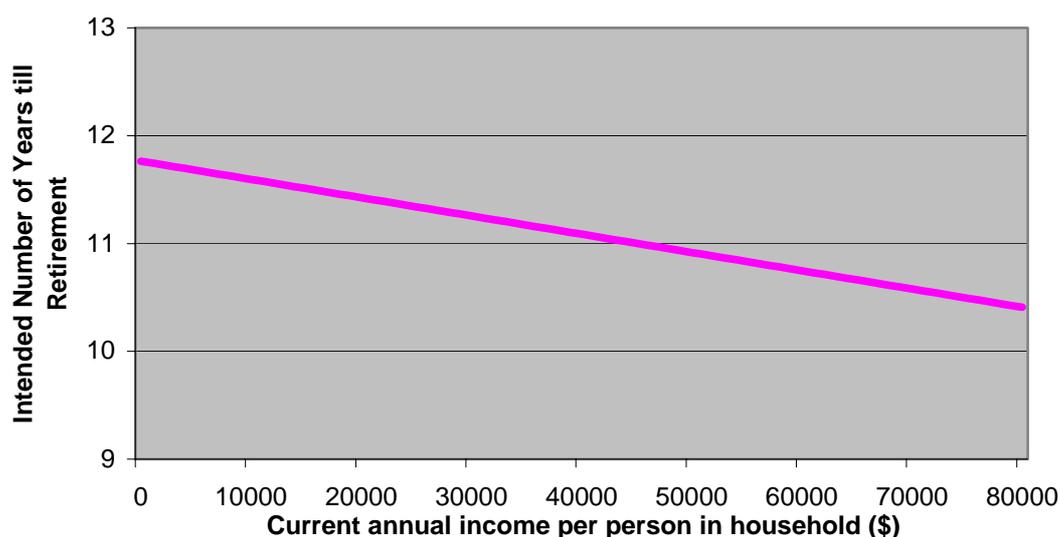
A regression analysis was undertaken to assess the impact of gender, marital status, age, home-ownership, education, employer type, income and age of youngest child on the intended years to retirement¹⁸ of workers aged 45 to 54 using the HILDA data. The effect these characteristics have on intended retirement age has already been discussed, however regression allows a more statistically robust analysis and is better at quantifying the effects of these characteristics. For those familiar with regression analysis, the equations and more detailed analysis are shown in the Appendix.

In summary, the first regression looked at the impact of gender, marital status, age, home-ownership, education, employer type and income¹⁹ on workers aged 45 to 54. Amongst other things, this regression shows that income has a slight impact on years to retirement. Perhaps the effect is best described by way of example:

If Joe is male, married to Jane, is 53 years old, rents a flat, has not attended university, works in the public sector, has an annual income of \$20,000, while Jane has an income of \$30,000, the estimated number of years to retirement for Joe according to the regression is 9.4 years. If Joe's neighbour, Bill had the same characteristics except that he and his wife earned double the amount Joe and Jane earned (\$100,000 combined), his estimated years to retirement would be 9.0 years. The relationship between income and years to retirement can be shown in Chart 9.

See Appendix for assumption used.

Chart 9. How income affects intended years to retirement*



* for a person with average characteristics other than income

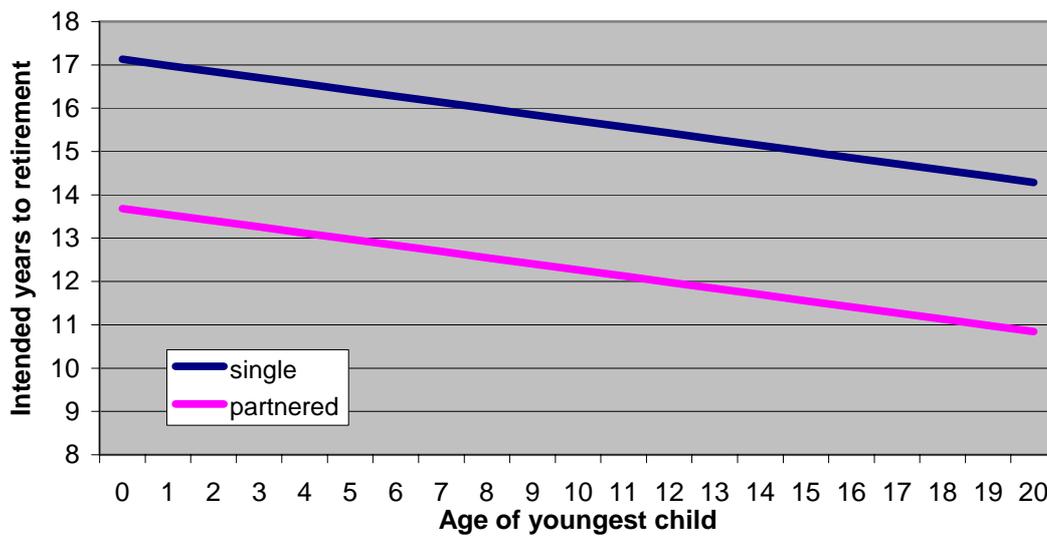
¹⁸ Intended years to retirement is easily calculated by subtracting age from intended retirement age.

¹⁹ To allow consistency between single and partnered person, income for partnered persons is defined as the average of their and their partner's income.

A second regression was done for those in the HILDA sample who had children in their household (most likely their own children), using the same variables as the first regression as well as the age of the youngest child. It estimated that on average, for every year younger the youngest child was, 0.142 years can be added to the intended years to retirement. So, if there were two people with identical characteristics, person A and person B, and person A's youngest child was 5 years old child and person B's youngest child was 15 years old, person A would expect to retire 1.42 years later.

Also of note, the second regression showed that if you had children, being single had a greater impact (increased your years to retirement) than if there were partnered.

Chart 10. How age of youngest child affects intended year to retirement*



* for a person with average characteristics other age of youngest child

7. Conclusions

This study has shown that gender, home-ownership and retirement intentions of their partner are all factors that impact upon an individual's intended retirement age. For males, if they work in the private sector, have flexible work hours and a stress-free work environment, they intended to retire later. For females, a university education and not being partnered seemed to encourage an extension of their working life.

One quarter of all workers in the 45 to 54 year age-group could not say when they would retire or had no plans. In general, the lower their income, the more uncertain they were as to when they would retire.

Although females are more likely to retire at a younger age than males, the gap between male and female retirement ages is narrowing as attachment to the workforce of females increases.

Of course, the role of an individual's characteristics in predicting their retirement age is based on the premise that they have complete control over their time of retirement. At present, 62% of workers who retire before the age of 60 do so involuntarily. Factors mostly beyond the control of the individual such as their health and economic conditions in the next decade will influence average retirement age. A decrease in retrenchments coupled with lower returns on superannuation funds would be expected to place upward pressure on the age of retirement, while a return to stronger investment returns and/or further retrenchments of older workers could see a renewal of the trend to earlier retirement.

Future waves of HILDA will allow the monitoring of the 45 to 54 year age cohort. Only in the next decade or so, when a significant number of this group start retiring will we really know the precise link between intended and actual retirement age.

Appendix – Results of Regression Analysis

Regression 1

This regression included all people aged 45 to 54 who answered the retirement intention question and either provided an age at which they intend to retire or said they would never retire. As previously discussed an age of 67 was attributed to those in the latter group. The number of people used in this regression totalled 1,390.

The dependent variable is the number of years to retirement {YTR}, which can be easily calculated by deducting the respondent's age from their intended retirement age. The following variables are independent and were used to derive the equation which best fit the data (Symbol used in equations in parentheses).

- Sex {Sx = 0 for males, Sx = 1 for females}
- Marital status {MS = 0 for single, MS = 1 for partnered}
- Current Age {Ag}
- Home ownership {HO = 0 for non-homeowner, HO = 1 for homeowner}
- Education {HE = 0 for no university educated, HE=1 for university educated}
- Employer type {PP = 0 for private sector, PP = 1 for public sector}
- Current Income²⁰ {Y}

There were 83 of the 1,390 people who either did not know or refused to state their income. So that these people could still be included in the analysis their income was estimated based on their gender and occupation. For partnered persons, both their income and their partner's income were required. There were 58 of 1,062 people where the income of the partner was not known or no answer was given. The same method was employed to estimate unknown partner income.

Equation 1:

$$YTR = 52.214 - 2.113 * Sx - 1.785 * MS - 0.743 * Ag - 1.709 * HO + 1.785 * HE - 1.241 * PP - 0.00001694 * Y$$

All coefficients are significant at the .0001 level, except income which is significant at the .01 level.²¹ The adjusted R-squared (or what percentage of the variance is explained by the model) is 22.4%, an acceptable fit for cross-sectional data.

If we know the above characteristics of an individual, we can substitute the values in the above equation and it will give an estimate of years to retirement. For example if Joe is male, married to Jane, is 53 years old, rents a flat, has not attended university, works in the public sector, has an annual income of \$20,000, while Jane has an income of \$30,000, the number of years to retirement can be calculated like so:

²⁰ For partnered person, the income of both individual and partner were averaged so that the value was more comparable with the income of single person.

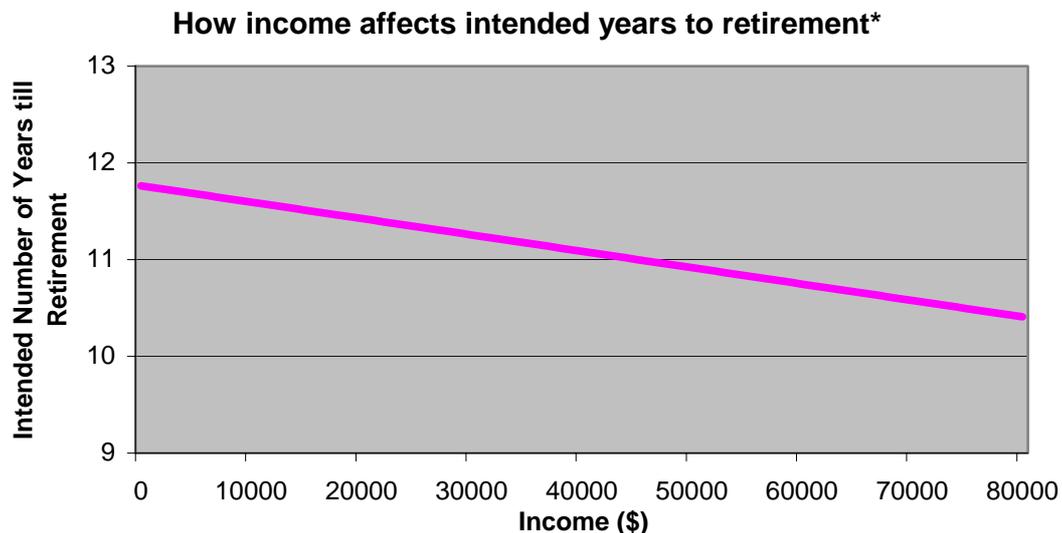
²¹ For all variables except income, there is a greater than 99.99% chance that they are correlated (either negatively or positively). For income, there is a 99% chance that a correlation exists between years to retirement.

$$YTR = 52.214 - 2.113 * 0 - 1.785 * 1 - 0.743 * 53 - 1.709 * 0 + 1.785 * 0 - 1.241 * 1 - 0.00001694 * (20,000 + 30,000)/2$$

$$YTR = 9.4$$

It is estimated that Joe has 9.4 years until he intends to retire. If Joe's neighbour, Bill had the same characteristics except that he and his wife earned double what Joe and Jane earned (\$100,000 combined), his estimated years to retirement would be 9.0 years.

The relationship between income and intended years to retirement can be represented in the following graph. This relationship shown below is assuming a person has average characteristics ($S_x = 0.444$, $MS = 0.830$, $Ag = 49.322$, $HO = 0.879$, $HE = 0.279$, $PP = 0.292$). Note that sex, marital status, home-ownership, education and employer type are all dummy variables. Their average value equates to the probability that their value is one.



* for a person with average characteristics other than income

Regression 2

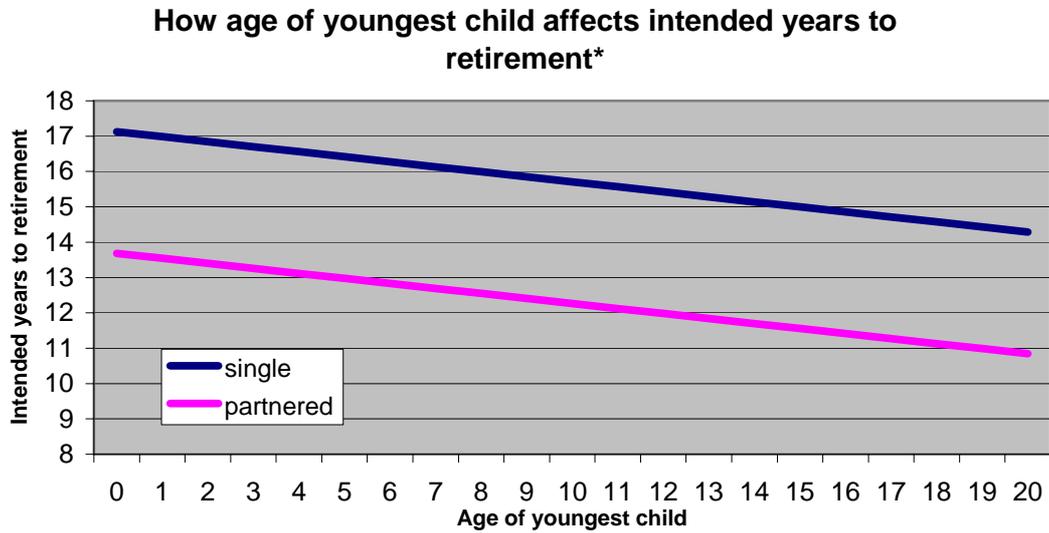
This regression included all those in Regression 1 that have children in their household, which provides a sample of 605 (or 44% of those in regression 1). Once again, the dependent variable is years to retirement, and the same independent variables are included as Regression 1. In addition, a derived variable that measures the age of the youngest household member is also included.

Equation 2:

$$YTR = 50.869 - 2.167 * S_x - 3.443 * MS - 0.650 * Ag - 1.373 * HO + 1.188 * HE - 1.340 * PP - 0.00000777 * Y - 0.142 * AgYK$$

Where AgYK is the age of the youngest child in the household.

We can show the relationship between years to retirement and the age of the youngest member of the household for those that are partnered and single, by setting all variables, except AgYK, to their average ($S_x = 0.375$, $A_g = 48.230$, $H_O = 0.919$, $H_E = 0.347$, $P_P = 0.314$, $Y = 36719$). We can create two different relationships, one setting MS to 0 (single persons) and the other setting MS to 1 (partnered persons).



* for a person with average characteristics other than age of youngest child

It easily observed that the age of the youngest member of the household, usually the child of the person, is a big determinant of the intended number of years to retirement. It can also be seen that for those in the 45 to 54 year age group with children, being single greatly increases their intended years to retirement.

References

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