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SUPERANNUATION DRAWDOWN BEHAVIOUR: AN ANALYSIS OF LONGITUDINAL DATA

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ABSTRACT

We conduct a longitudinal study of withdrawals from account-based pensions from superannuation savings to provide a better understanding of drawdown patterns in retirement. Our analysis indicates that most retirees in their 60s and 70s draw down on their account-based pensions at modest rates, close to the minimum amounts each year. It also suggests that most retirees would die with substantial amounts unspent if these drawdown rates were to continue. These findings are consistent with extant empirical evidence which indicates that retirees are inclined to draw down their wealth relatively slowly.

ACKNOWLEDGEMENTS: THIS RESEARCH WAS SUPPORTED BY THE CSIRO-MONASH SUPERANNUATION RESEARCH CLUSTER, A COLLABORATION BETWEEN CSIRO, MONASH UNIVERSITY, GRIFFITH UNIVERSITY, THE UNIVERSITY OF WESTERN AUSTRALIA, THE UNIVERSITY OF WARWICK, AND STAKEHOLDERS OF THE RETIREMENT SYSTEM IN THE INTEREST OF BETTER OUTCOMES FOR ALL.





CSIRO-Monash Superannuation Research Cluster

Superannuation drawdown behaviour: An analysis of longitudinal data

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THE AUTHORS WISH TO THANK MATT POWER OF THE AUSTRALIAN TAXATION OFFICE AND JAMES BRIGHT FOR THEIR EFFORTS IN GENERATING THE DATA FOR THIS RESEARCH. WE ARE ALSO GRATEFUL TO AARON MINNEY, DEB RALSTON AND OTHER MEMBERS OF THE CLUSTER FOR COMMENTS AND ASSISTANCE.



Executive summary

The superannuation system is only now coming of age as substantial numbers of people begin to retire with significant balances. What people choose to do with their savings is clearly of considerable interest to industry and government. For example, concerns are often expressed about the potential for retirees to rapidly exhaust their superannuation and thereafter rely on the age pension. However, the limited empirical evidence available to date suggests that most retirees are inclined to draw down their wealth relatively slowly.

On retirement, people with significant superannuation balances (i.e. over \$100,000) typically retain most of it in the superannuation system in the form of an account-based pension (which provides an income stream drawn down from their superannuation balance). Surprisingly few choose to invest in annuities, despite their apparent advantages in managing longevity risk (through offering a guaranteed income stream for life). Those with account-based pensions must withdraw a minimum amount each year (which is 5% for those aged 65-74, and increases with age), but beyond that they are free to choose how much to spend.

For this project CSIRO analysed the anonymised account records of over 150,000 individuals with superannuation, working with the Australian Taxation Office (ATO) and a large superannuation fund. The data cover members of funds regulated by the Australian Prudential Regulation Authority (APRA), which includes all retail and industry superannuation funds, as well as people with self-managed superannuation funds (SMSFs).

The data show that most retirees with account-based pensions withdraw close to the minimum allowable amount from their superannuation each year. There is, however, considerable variation, with around a quarter of retirees withdrawing more than twice the minimum. Those with larger balances are most likely to make the minimum allowable withdrawals, and there is some evidence that men withdraw superannuation at a greater rate than women, which may reflect the longevity gender gap.

Overall, across both APRA and SMSF funds, with large and small balances, the majority of withdrawals are close to the minimum. These modest withdrawal rates, coupled with the relatively strong investment returns seen recently, mean that most retirees see their superannuation balance actually increase slightly in most years. These increases are in nominal rather than real (i.e. inflation adjusted) terms, and are unlikely to persist as superannuants get older (minimum withdrawal rates increase with age) or in times of lower investment returns.

Nonetheless, if people continue to withdraw at or around the minimum (note the data mainly cover retirees aged in their 60s and 70s, as so far there are few older people with superannuation), many will die with substantial amounts of their savings unspent. This represents the cost of self-insuring for longevity risk, with the next generation likely to be the beneficiaries through inter-generational bequests.

From a behavioural science perspective, the data suggest that many people may be struggling with the complexity of the drawdown decision and may, by default, be using the minimum withdrawal rates as a guide. The account-based pension system requires retirees to make withdrawal and spending decisions under considerable uncertainty around longevity and future expenses. Given

people are generally risk averse, it is perhaps not surprising that the minimum withdrawal rates have come to act as an anchor for uncertain decision-makers.

Framing is also likely to be important. The superannuation system is generally thought of, and discussed, in terms of savings and investment, rather than consumption and spending. An individual's account-based pension contains what is, for that individual, a large sum of money which they have spent many years saving. While straightforward to describe in a spreadsheet, switching from thinking about saving to thinking about spending may not be easy for a human decision-maker. Drawing down on a non-replenishing resource may also represent a psychological challenge.

Changing the way in which the drawdown phase is framed may therefore help people's decision-making. As the superannuation system matures it would also benefit from a greater range of retirement income products to help individuals better manage their longevity risk. Those concerned with superannuation, whether as trustees, advisors or policy makers, can use data-driven behavioural insights to better understand and serve superannuants.

Introduction

The superannuation system as we know it began in 1992 with the introduction of the superannuation guarantee, which required all employers to contribute a proportion (initially 3%, rising to 9% by 2002 and 9.5% today) of an employee's earnings into a superannuation fund. Prior to this time a growing number of workers had been receiving superannuation as part of their employment award conditions (Warren 2015).

It is therefore only in recent years that large numbers of people have begun entering retirement with significant superannuation balances. On retirement people are free to choose what to do with their superannuation balance. They may withdraw some or all of it from superannuation (as a 'lump sum'), set up an account-based pension (which provides a flexible income stream from a person's superannuation balance) or invest in longevity management products such as annuities (which offer a fixed income stream, often for life).

Concerns have been expressed about the potential for retirees to overspend (relayed in Productivity Commission 2015), as there are no limits to the amounts people can withdraw as lump sums or through account-based pensions. Retirees who spend their superannuation savings would generally become eligible for the government age pension, which might provide an incentive for rapid consumption. This risk may be exacerbated by the fact that retirees can access their superannuation from the age of 55 (rising to 60) compared to 60 (rising to at least 67) for the age pension. Such behaviour would have significant implications for public spending, so there is naturally considerable interest in better understanding how people are using their superannuation in retirement.

The empirical evidence to date suggests that retirees are inclined to draw down their wealth relatively slowly. Wu et al. (2014) examined Centrelink data covering a sample of aged pensioners between 1999 and 2007, finding evidence that many retirees engage in precautionary saving, holding or even building a buffer of wealth (in addition to the family home) in the order of \$50,000 per person. Rather than drawing down their assets, many were living off the income generated from their investments, along with the age pension, often spending less than the Association of Superannuation Funds of Australia (ASFA) standards for even a modest lifestyle (Wu et al. 2014). It is unclear to what extent this behaviour is motivated by precautionary or bequest motives, or some combination of both.

The cohort examined by Wu et al. (2014) had very limited superannuation, as the sample began in 1999 when few retirees had significant balances (less than 10% of the sample had money in superannuation). People who retire with small balances (less than \$80,000) are likely to withdraw all of their superannuation as a lump sum (Productivity Commission 2015). This is to be expected as money kept in superannuation will be subject to ongoing fees, and the tax benefits are of little relevance to those on low incomes. The median value of lump sums at retirement is \$20,000 (using data from 2012-13), which is mostly used to fund housing (including paying down mortgages and renovations) or invested elsewhere, with only a minority using it primarily for consumption (Productivity Commission 2015).

Retirees with larger balances typically take no more than a small proportion in the form of a lump sum at retirement; the majority then choose to take an account-based pension rather than an annuity (Productivity Commission 2015). Relatively few people buy annuities (O'Meara et al. 2015), which is in line with experience elsewhere (e.g. Benartzi et al. 2011). This lack of interest in annuities

is puzzling, as they appear to offer a more efficient way for self-funded retirees to manage longevity risk (Ralston and Maddock 2015).

Retirees with account-based pensions are subject to minimum drawdown rates, which increase with age (Table 1), but are free to withdraw more. The minimum drawdown rates were intended to provide a relatively stable retirement income with virtually no risk of running out of money (Australian Government Actuary 2014). However, for individuals this strategy will be costly. For example, a man retiring at 65 and sticking to the minimum drawdown rates will on average leave 31% of his account-based pension unspent (Australian Government Actuary 2014). To date there has been little analysis of the actual rates at which the new cohort of retirees are choosing to drawdown their account-based pensions from superannuation savings.

Table 1: Minimum drawdown rates by age for account-based pensions; these rates were reduced by 50% in 2008/09, 09/10 and 10/11 tax years, and by 25% in 2011/12 and 2012/13.

Age	<65	65-74	75-79	80-84	85-89	90-94	95+
Minimum drawdown	4%	5%	6%	7%	9%	11%	14%

This study aims to address that gap using data accessed from the Australian Taxation Office (ATO), which is described in more detail in Zhu et al. (2016), supplemented by industry data. The ATO data covers members of superannuation funds regulated by the Australian Prudential Regulation Authority (APRA), which includes all retail and industry super funds, as well as people with self-managed superannuation funds (SMSFs). APRA funds have a total of around 29 million member accounts (many people have more than one account), with \$1.25 trillion of savings (APRA 2016). There are now over 550,000 SMSFs, with just over one million members in total (the typical fund has two members); these SMSFs hold around \$590 billion of savings, accounting for 29% of total superannuation assets (ATO 2015).

Methods

The ATO dataset provided a random sample of 50,000 individuals with only an APRA-regulated superannuation fund balance in 2004; 50,000 with only an SMSF balance in 2004; and a further 50,000 who had both APRA and SMSF balances (Zhu et al. 2016). The dataset therefore covered a total of 150,000 individuals. The data covered 11 tax years, from the year ending in June 2004 to the year ending in June 2014, and included:

- year of birth
- superannuation balance at the end of each tax year
- personal contributions to superannuation in each tax year
- total contributions (both personal and employer) in each tax year
- total amount of benefit payments received (if any) in each tax year (available only for SMSF accounts), split by lump-sums, pension and transition to retirement income streams

The APRA fund data were drawn from Sections C, D, E and F of the “Member contributions statement” form submitted to the ATO by superannuation funds in accordance with APRA regulations and subsequently linked to an individual. All of an individual’s superannuation is therefore covered, regardless of the number of accounts held. Each SMSF member is required by law to submit a tax return each year, including account information for each member of the fund (with more detailed information than is provided for APRA fund members). The SMSF data used for our

analysis were at the level of the individual, not the fund, drawn from Section F of the “Self-managed superannuation fund annual return” form.

Due to limitations in the ATO data with respect to the drawdown from APRA funds, a second dataset was also included in the study. This second set of data covers approximately 2,600 retirees with account-based pensions at a large APRA regulated superannuation fund, across five financial years to June 2015. The data show balances at the end of each financial year, along with withdrawals and contributions made during the year. It also includes member age (in years) at the start of each financial year and gender.

Due to privacy restrictions imposed by the ATO, balances were rounded to the nearest \$1,000, which impacted the accuracy of some of the data, such as returns and withdrawal rate calculations (which particularly impacted the calculations for APRA funds because these funds generally had much smaller balances). The process of extracting the data, and a range of further descriptive statistics, are provided by Zhu et al. (2016); the current paper focusses only on drawdown behaviour.

Results

Demographics

Figures 1-3 show the age distributions of the individuals represented in the ATO dataset. Individuals with only an APRA superannuation fund covered a wide span of ages (Figure 1), reflecting the working age population. This means there are relatively small numbers of APRA only retirees in these data (a gap which is addressed in the second dataset covering APRA retirees).

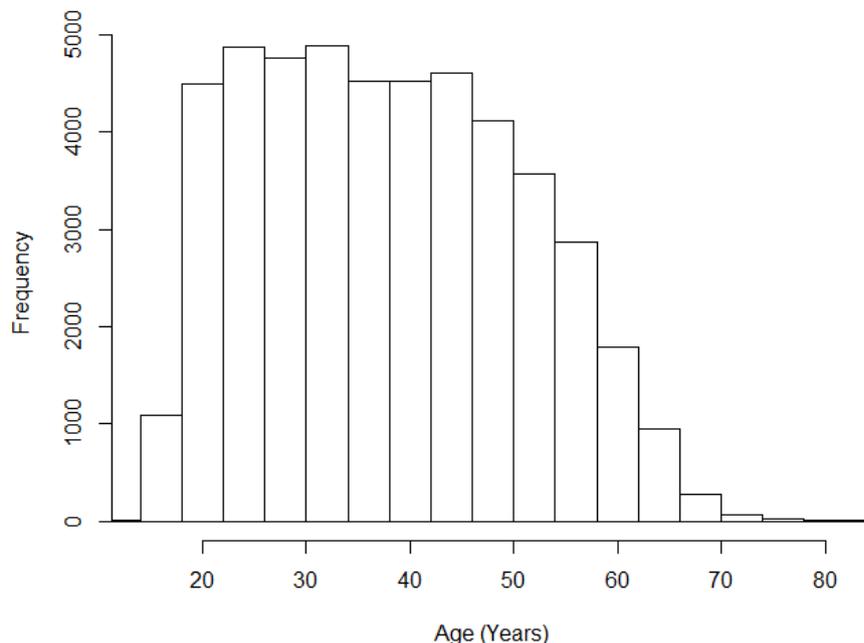


Figure 1: Age distribution of individuals with an APRA fund only in the ATO dataset.

Figure 2 shows individuals in the ATO dataset with an SMSF only tended to be older than those with an APRA only fund, reflecting the fact that SMSFs are most suitable for those with larger balances. Those with both APRA and SMSF balances were on average slightly younger than those with just an SMSF (Figure 3).

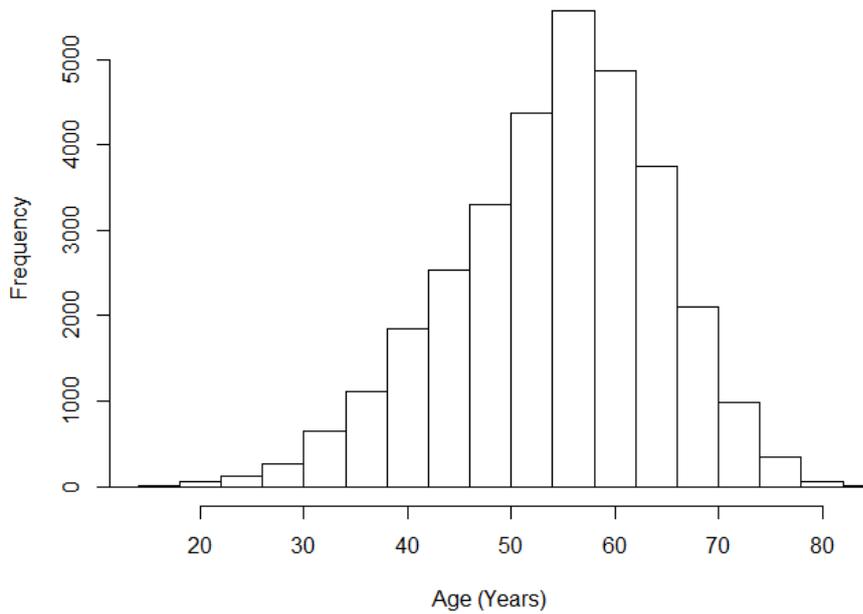


Figure 2: Age distribution of individuals with an SMSF only in the ATO dataset

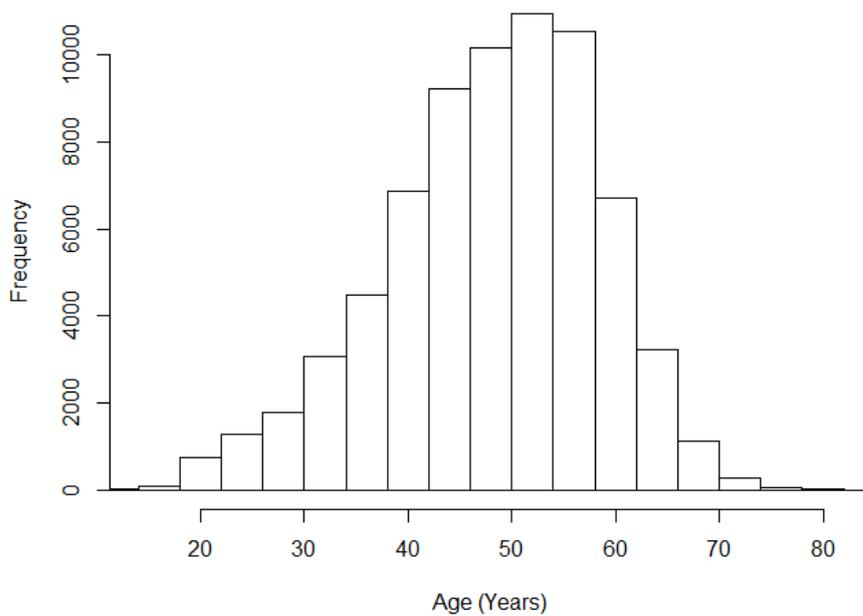


Figure 3: Age distribution of individuals with both an APRA fund and an SMSF in the dataset

Median balances (all members)

The average (median) balance of APRA superannuation fund members in this dataset were relatively modest, around \$50,000 for those with just the APRA fund (Figure 4), and less for those who also had an SMSF (Figure 5). The median balance for both APRA groups combined was \$33,000. As expected, balances increase during working age years, particularly among those whom only have APRA superannuation (Figure 4). At older ages the trend is less clear; those in their 70s have the largest balances, but this is likely to be because most individuals who retire with smaller balances will withdraw it as a lump sum rather than retain it in superannuation. Given the small numbers in older cohorts, data are only shown to age 76.

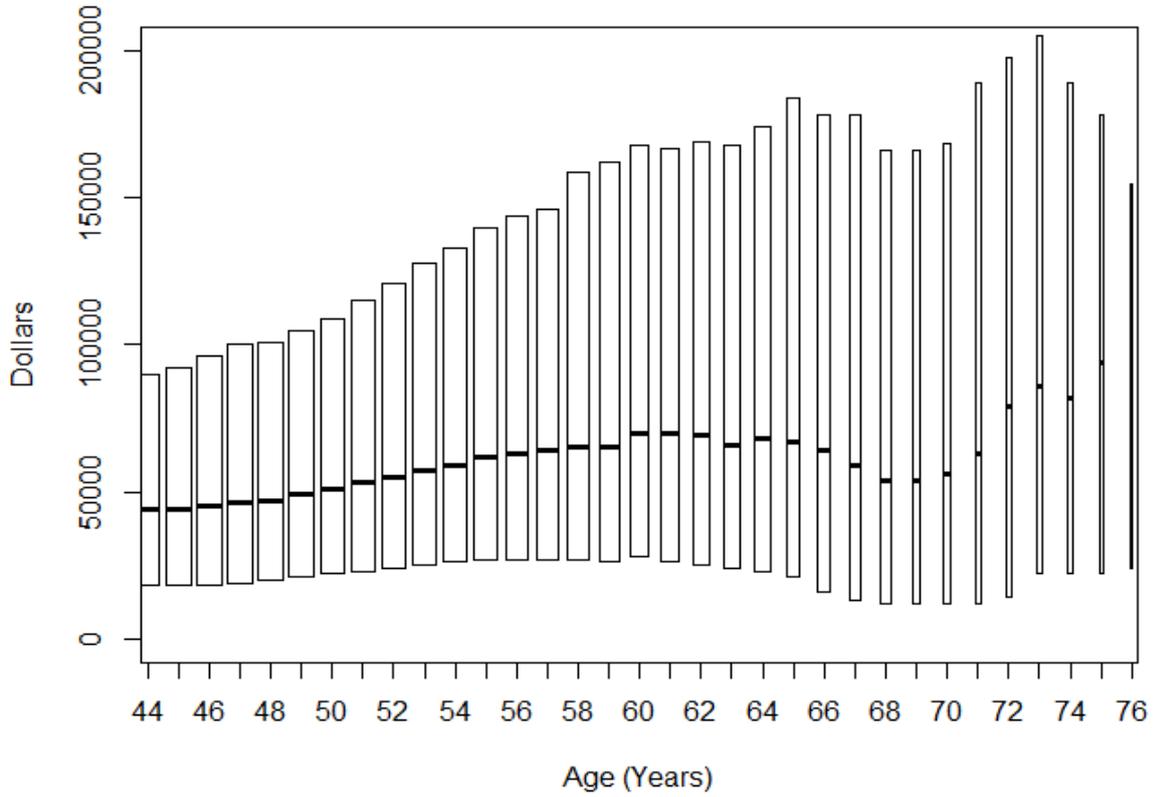


Figure 4: Balances for all members with an APRA fund only in the dataset, by age (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

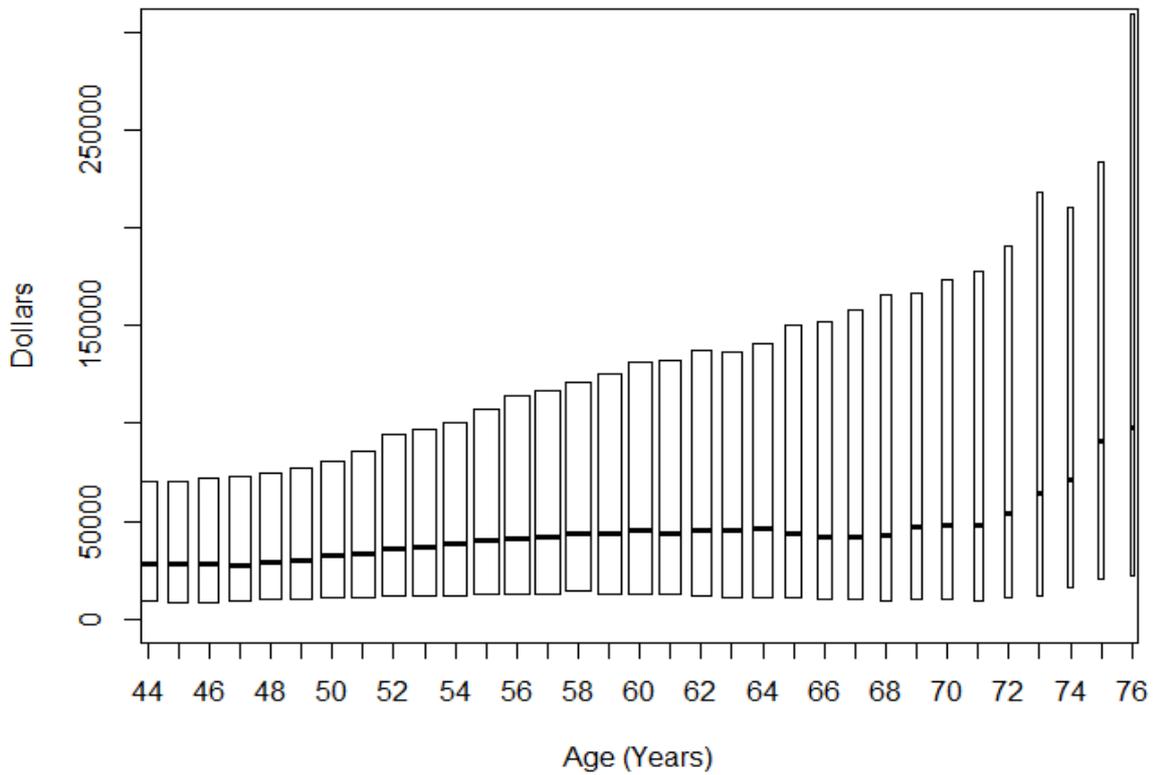


Figure 5: Balances of APRA funds for all members with both APRA fund and SMSF in the dataset, by age (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

Individuals with SMSFs had much higher balances than the typical APRA account (Figure 6, Figure 7); the overall median was \$294,000 (note the scale on these figures is an order of magnitude higher than on the previous figures for the APRA balances). The largest balances were held by those who had an SMSF only (Figure 6).

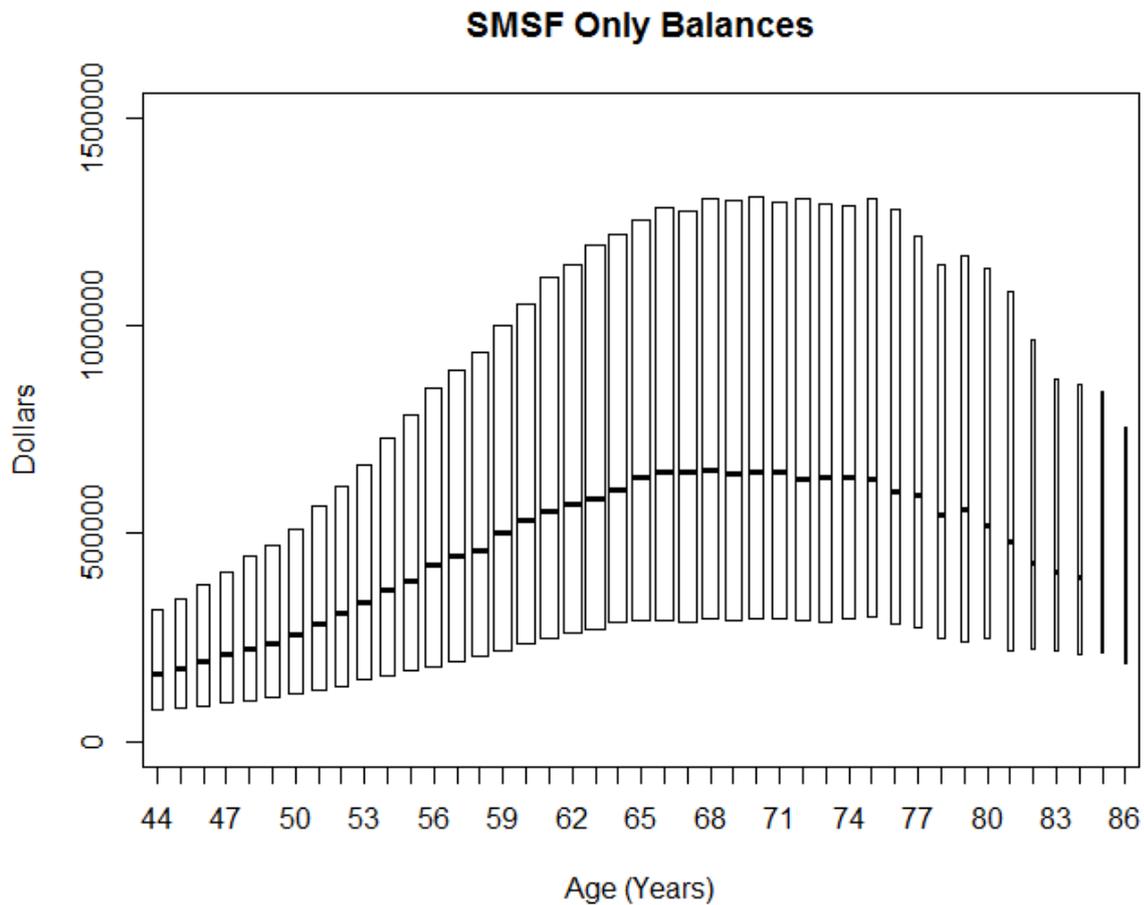


Figure 6: Balances for all members with an SMSF only in the dataset, by age (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

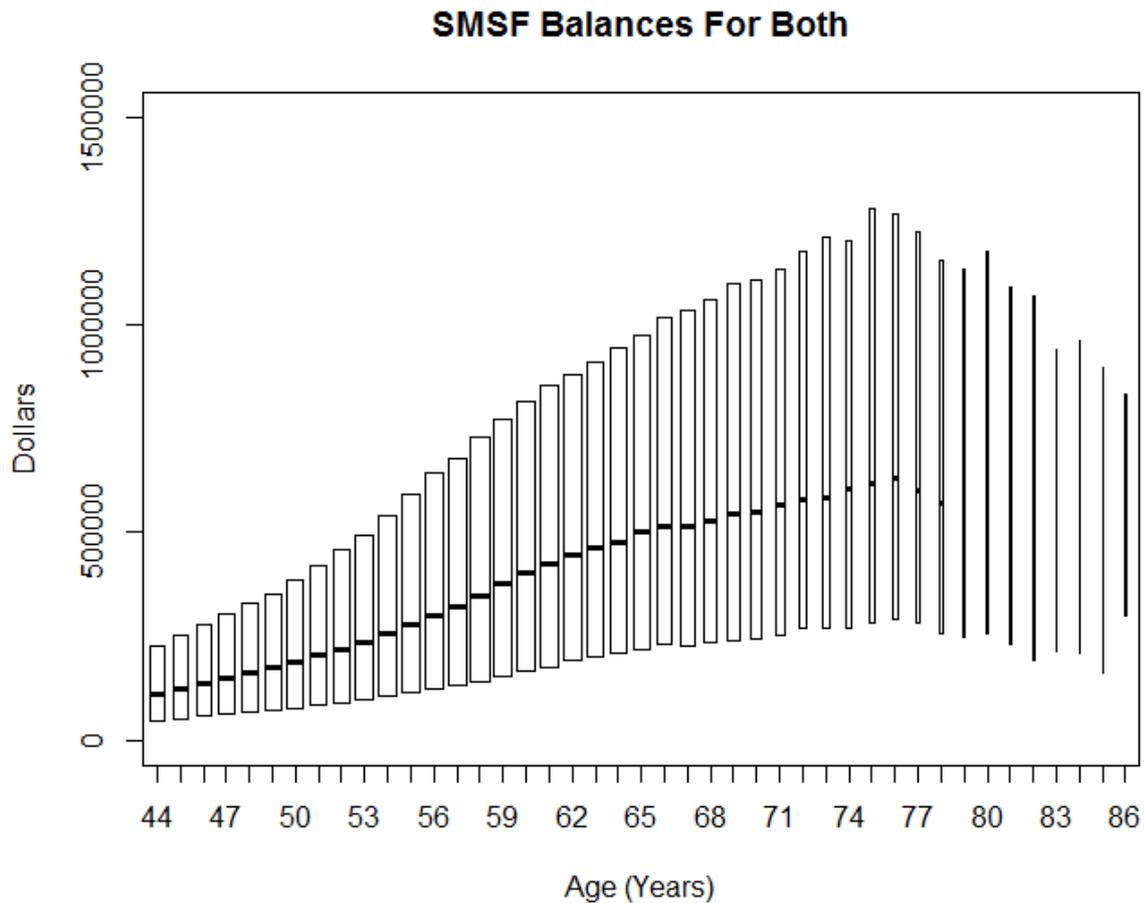


Figure 7: SMSF balances for all members with both APRA and SMSF in the dataset, by age (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

Balance at retirement

The ATO dataset does not directly indicate retirement age. For our analysis it was inferred as the age at which an individual ceased making contributions to superannuation. The overwhelming majority of individuals with just APRA superannuation had less than \$100,000 at retirement, while a small number had much larger balances; the median was \$67,000 (Figure 8). Those who also had an SMSF tended to have less in their APRA fund than those who only had an APRA fund (Figure 9); the median retirement balance was \$35,000.

APRA Only Retirement Balance

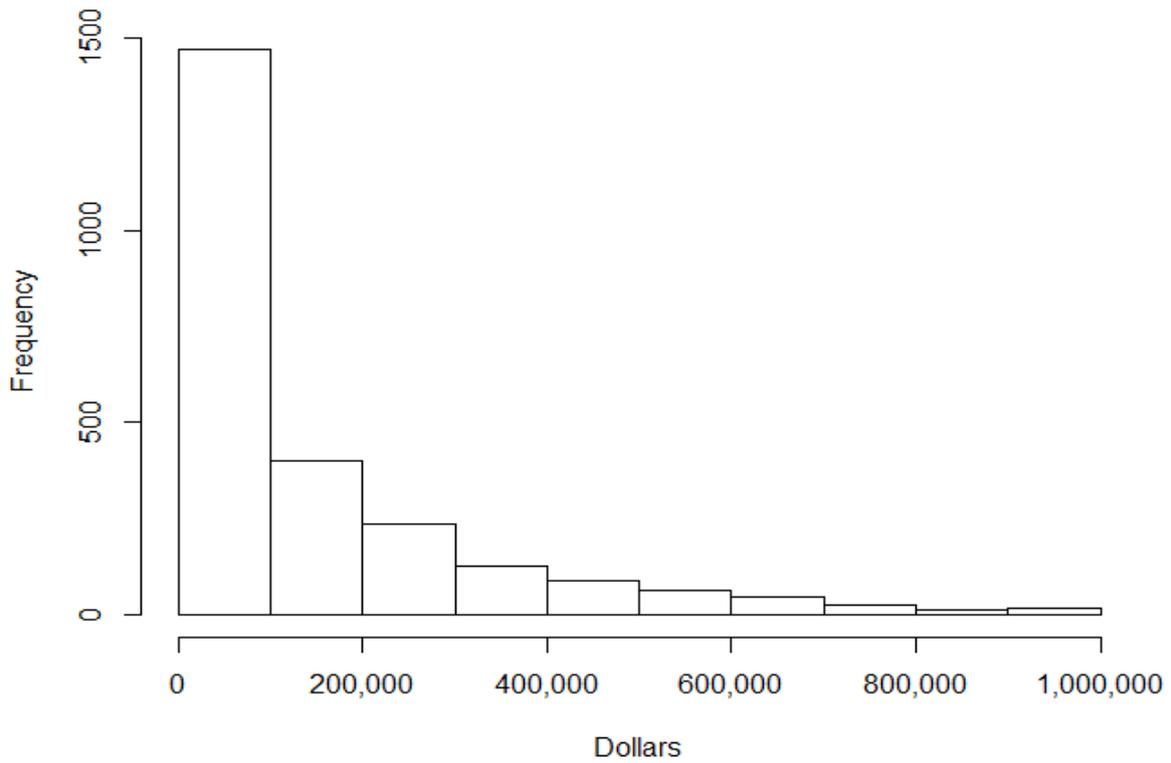


Figure 8: Frequency distribution of balance at inferred retirement age for individuals with an APRA superannuation fund account only.

APRA Retirement Balance For Both

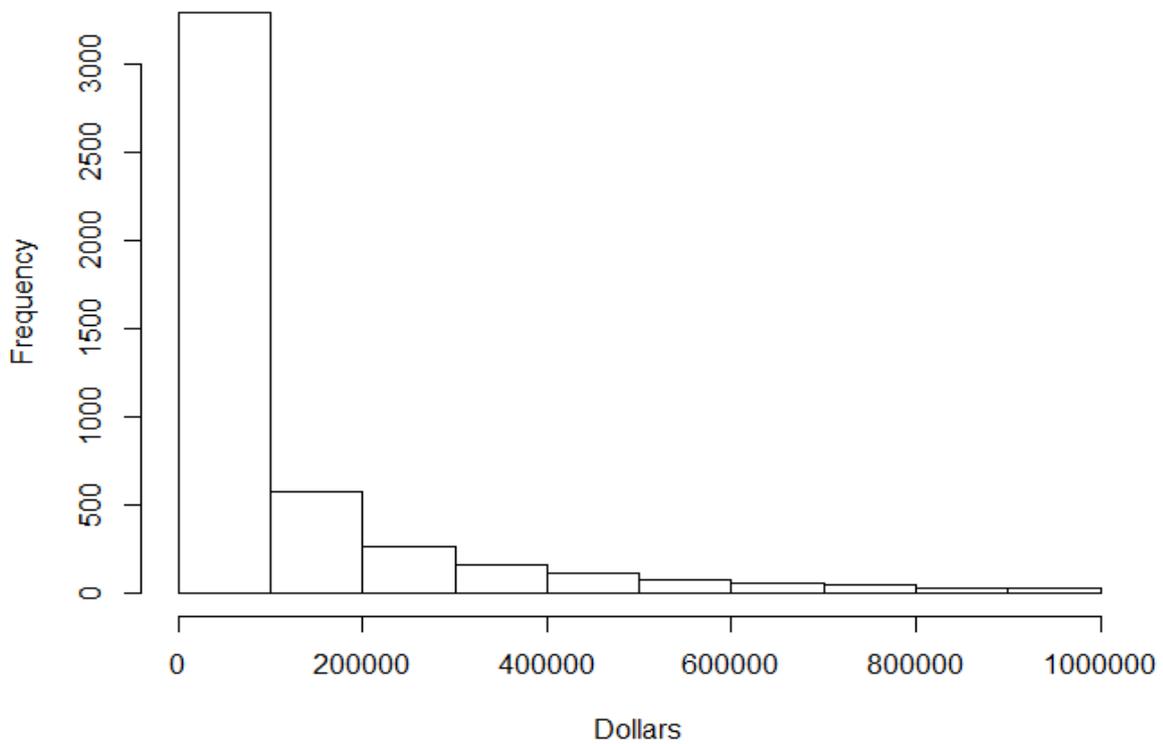


Figure 9: Frequency distribution of APRA fund account balance at inferred retirement age for individuals with both APRA fund and SMSF balances.

Individuals retiring with an SMSF had much larger balances (Figure 10, Figure 11) (note the different scale on these charts). For those with just an SMSF the median individual balance at retirement was \$670,000, while those who also had an APRA fund had a median of \$503,000 in their SMSF.

SMSF Only Retirement Balance

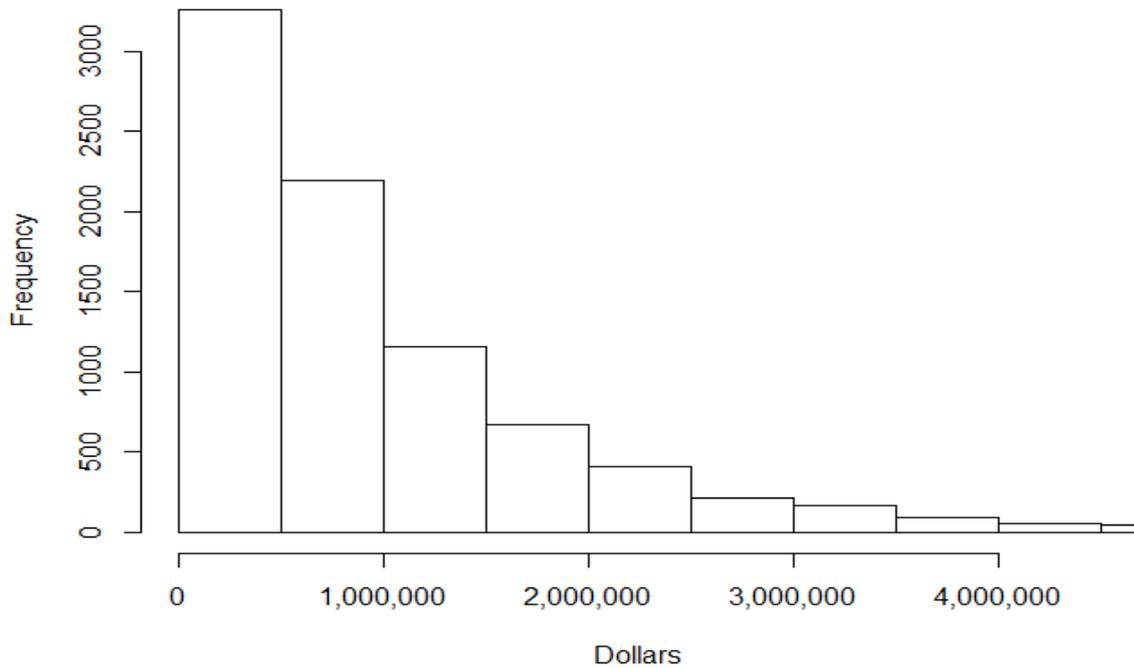


Figure 10: Frequency distribution of balance at inferred retirement age for individuals with SMSF only.

SMSF Retirement Balance For Both

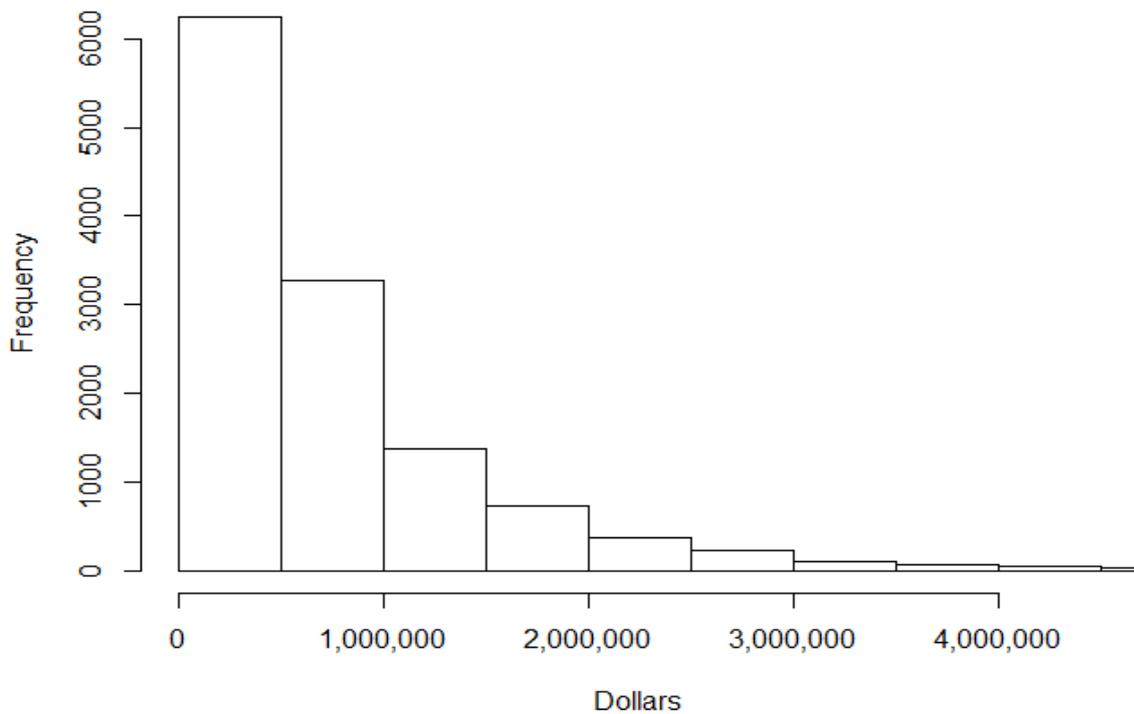


Figure 11: Frequency distribution of SMSF balance at inferred retirement age for individuals with both an APRA and SMSF balance in the ATO dataset.

Balance change in retirement

The ATO dataset includes withdrawal rates for SMSFs, but not for APRA accounts. Figure 12 shows withdrawal rates by age (the thicker line represents the median). The median withdrawal rate is between five and six percent for retirees aged up to 75, increasing to around 6% after that. Note the data were rounded to the nearest \$1,000, which introduces some noise into the calculation of withdrawal rates. In five of the eleven years covered by the data minimum withdrawal rates were reduced (see Table 1), hence the lower quartile tracks below the standard minimum withdrawal rates. While most retirees withdraw less than 6% annually, there is considerable variation, and some withdraw much larger amounts; the upper quartile of withdrawals is at 10-12% (Figure 12).

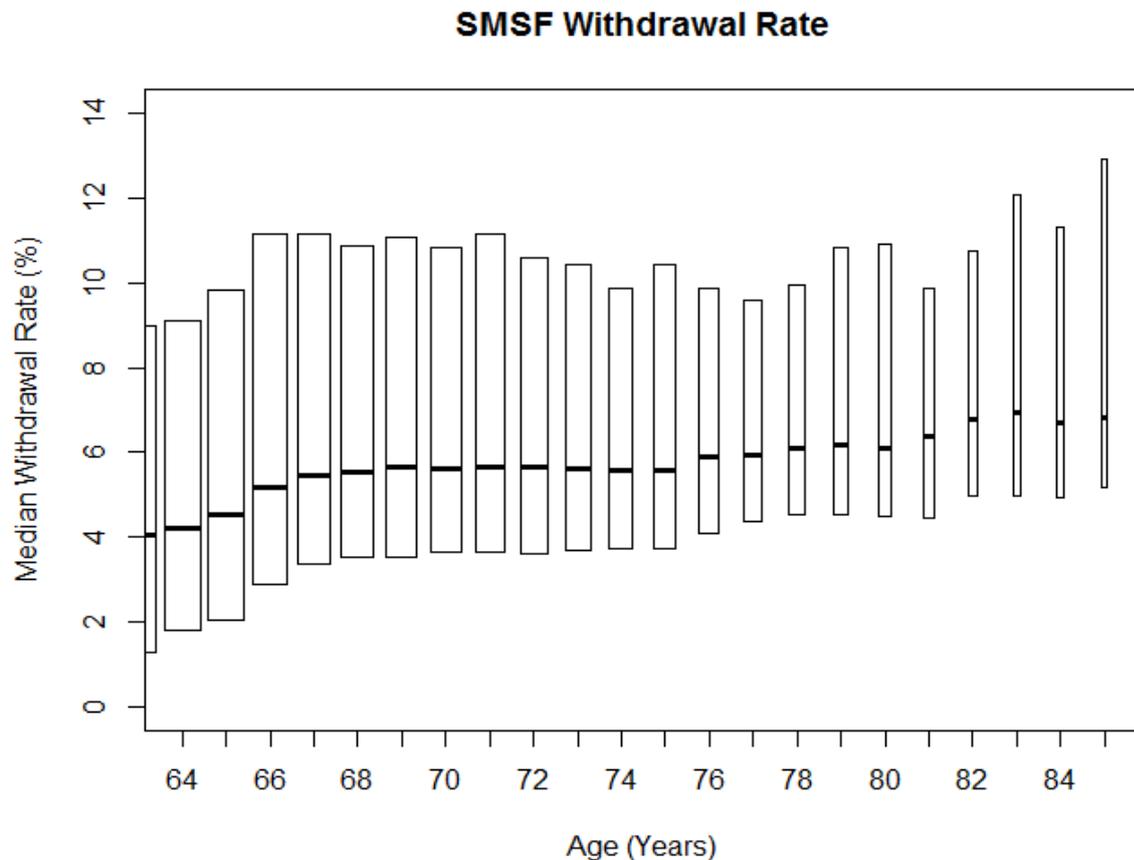


Figure 12: Withdrawal rate, as a proportion of balance, for SMSF accounts by age (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

Withdrawal rates were broken down into three groups according to overall balance in the initial year of the dataset. Those with the highest initial balances (representing the top third of the sample) showed the lowest withdrawal rates (Figure 13).

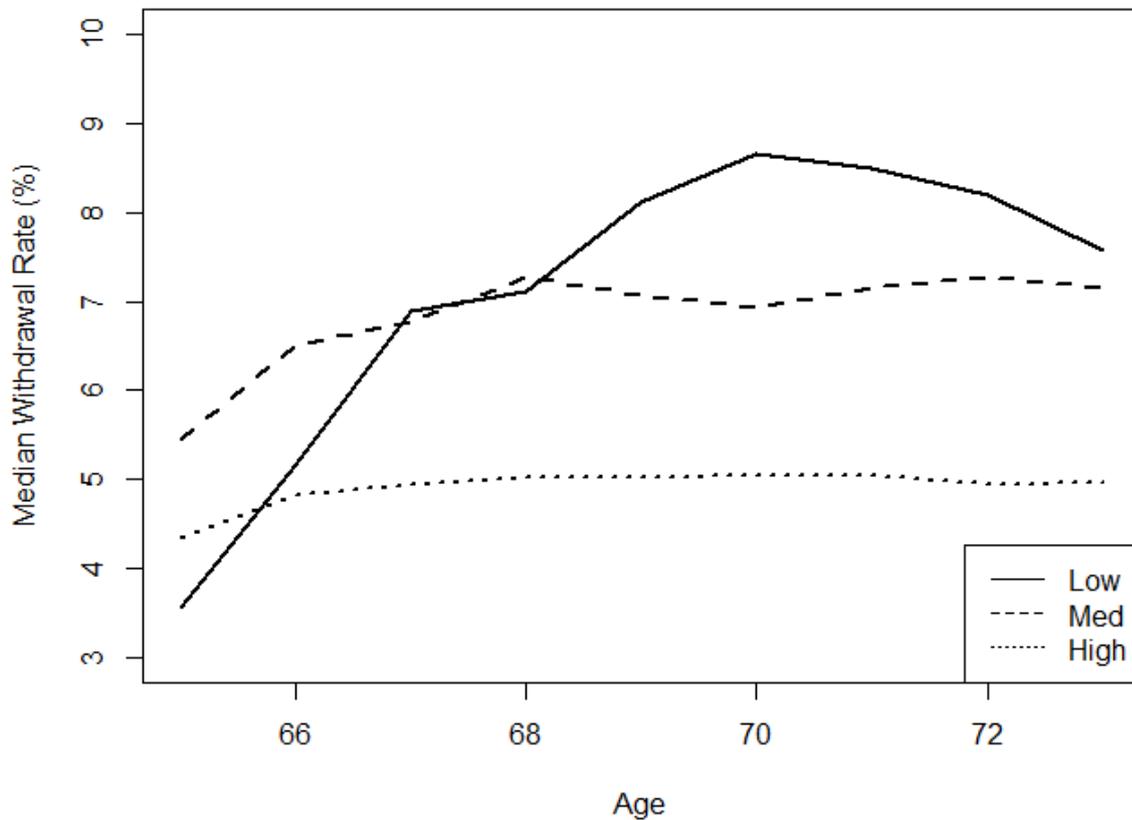


Figure 13: Withdrawal rates for SMSF retirees classified into three groups based on balances in 2004. Note that rounding introduces greater errors for the low balance group.

Retirees' balances show little evidence of declining with age (Figures 14-17). However, it is probable that accounts with smaller balances are more likely to be closed, meaning that median balances will be higher for older retirees, particularly those with both SMSF and APRA accounts. As can be seen from Figure 16 and Figure 17 the sample size of retirees in their 80s is very small, so nothing can be reliably inferred here about drawdown behaviour among this age group.

APRA Only Balances

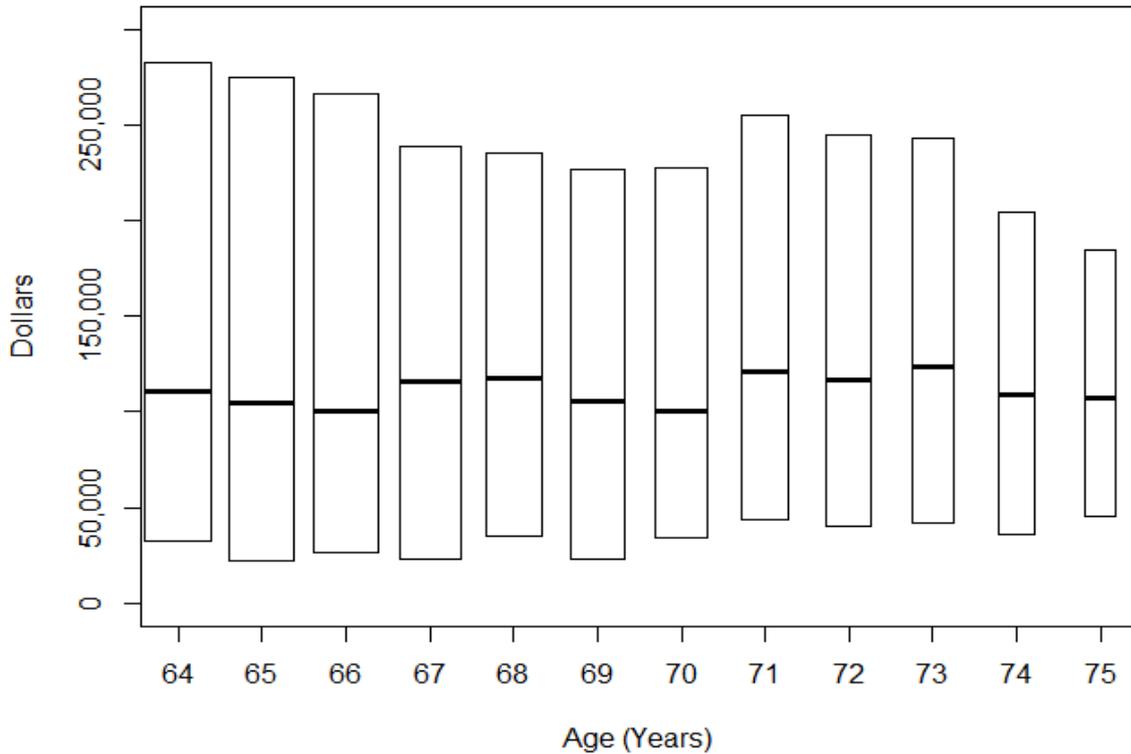


Figure 14: Balances held by retirees with just an APRA superannuation fund (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

APRA Balances For Both

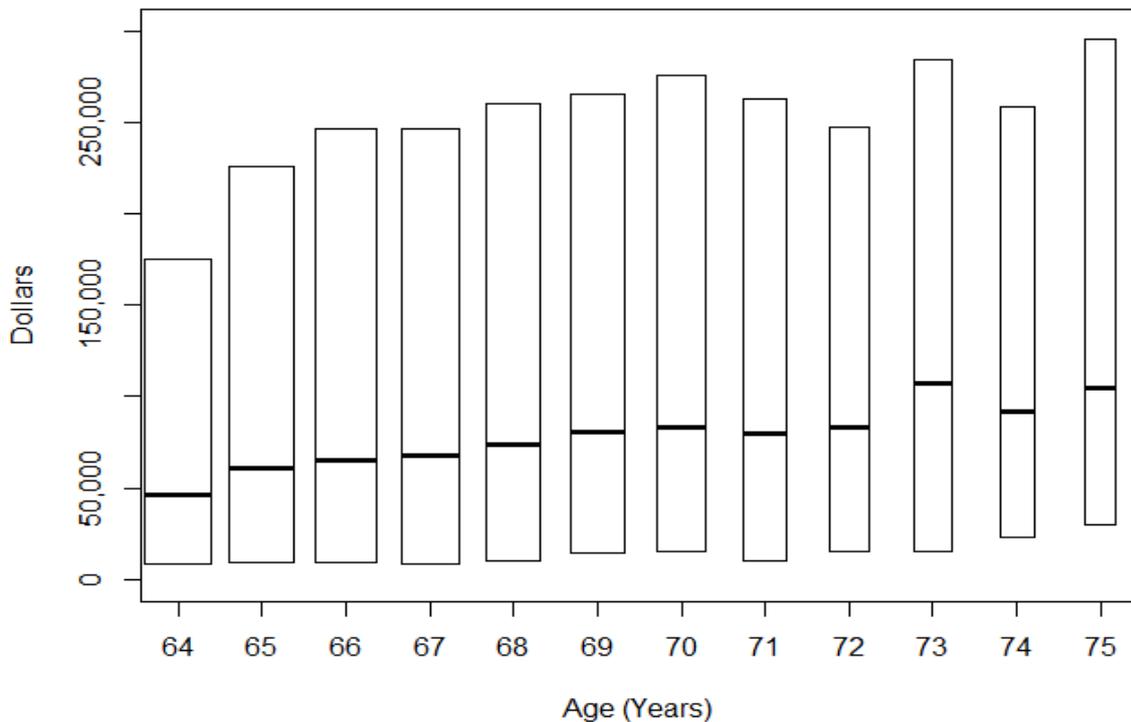


Figure 15: APRA fund balances held by retirees with both APRA fund and SMSF balances (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

SMSF Only Balances

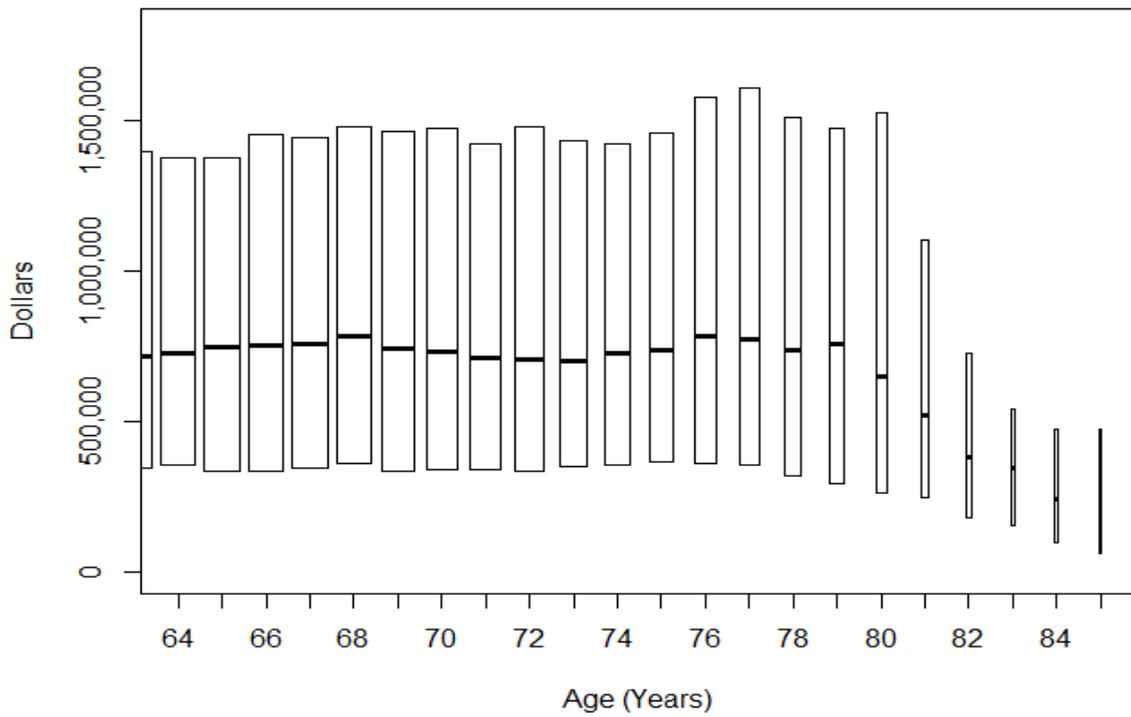


Figure 16: Balances held by retirees with an SMSF account only (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

SMSF Balances For Both

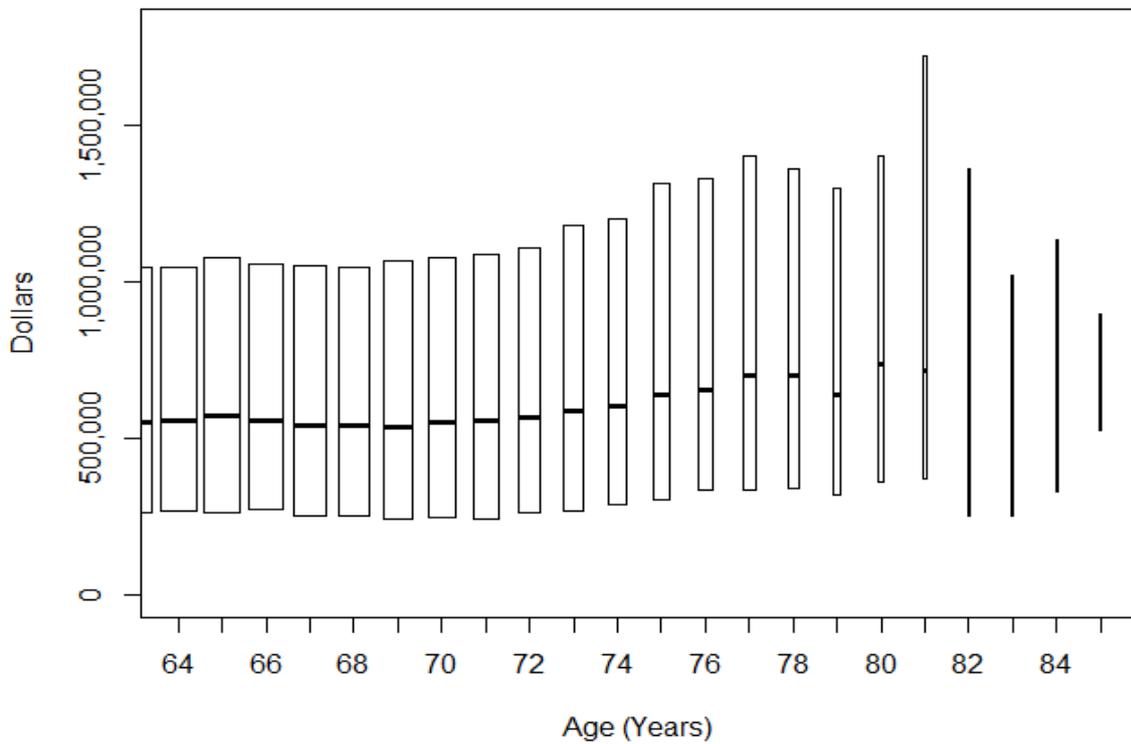


Figure 17: SMSF balances held by retirees with both APRA fund and SMSF balances (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

Breaking the data into groups based on balance size shows the same pattern of relatively stable account balances among those who started out with low, medium and high balances (Figures 18-21).

APRA Only Balances

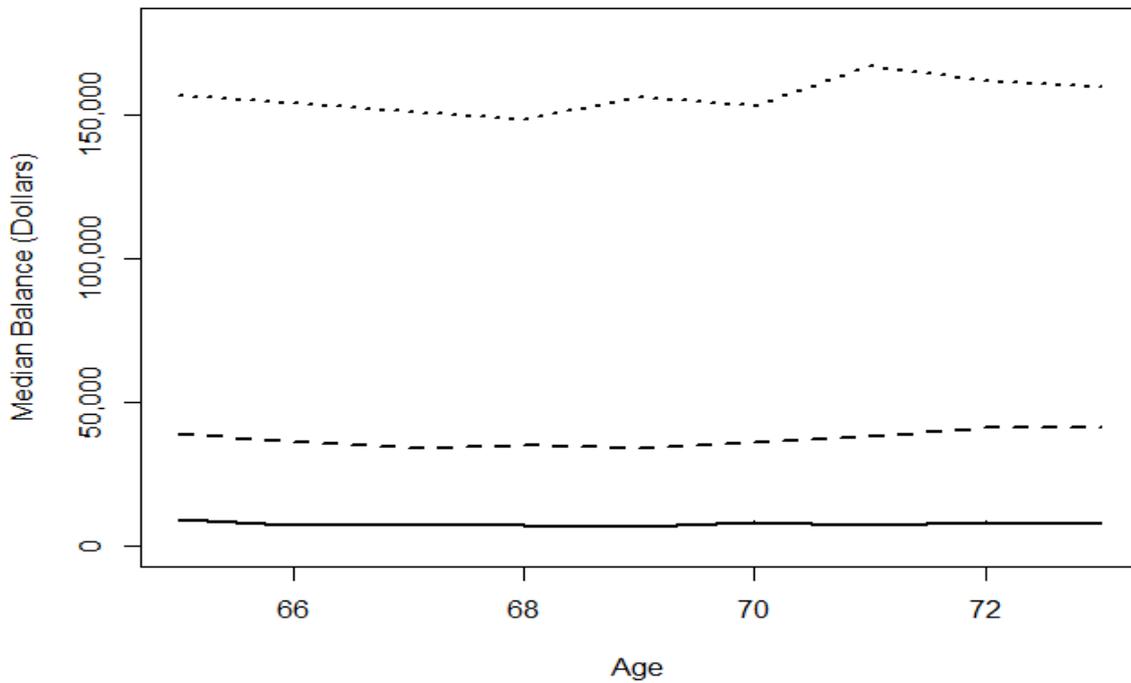


Figure 18: Balances held by retirees with an APRA fund only, split into groups based on the relative size of their balance in 2004 (the solid line represents those with low balances, the dashed line medium balances and the dotted line high balances).

APRA Balances For Both

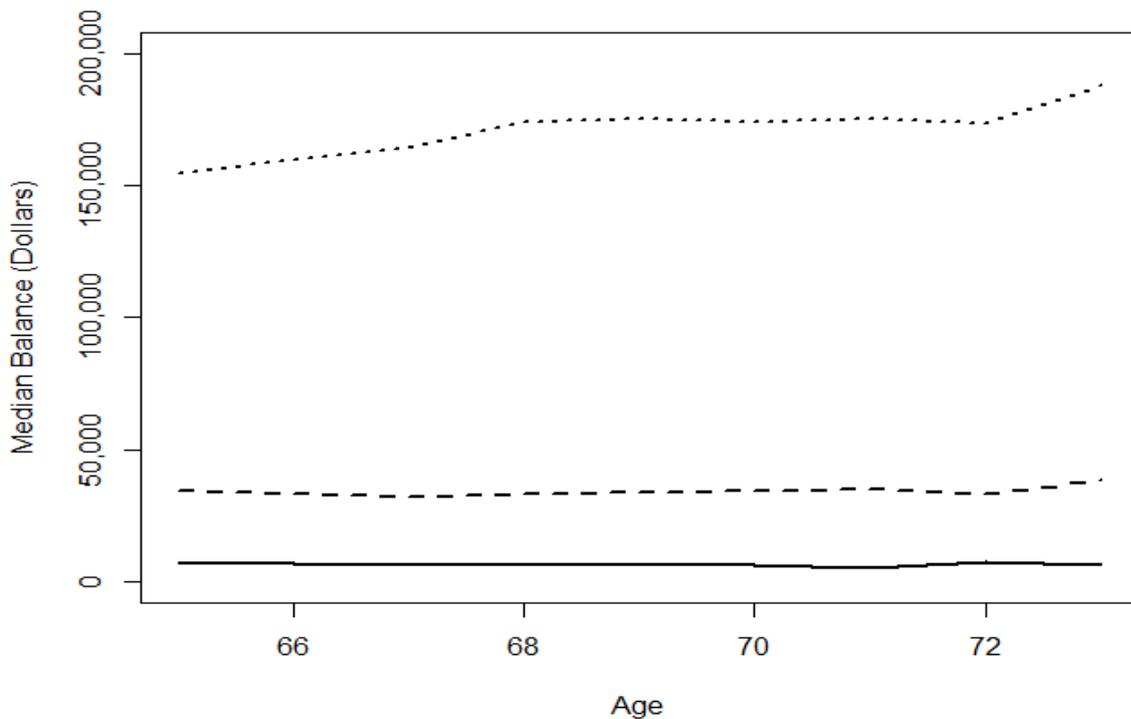


Figure 19: APRA balances held by retirees with both an APRA fund and SMSF balance, split into groups based on the relative size of their APRA balance in 2004 (the solid line represents those with low balances, the dashed line medium balances and the dotted line high balances).

SMSF Only Balances

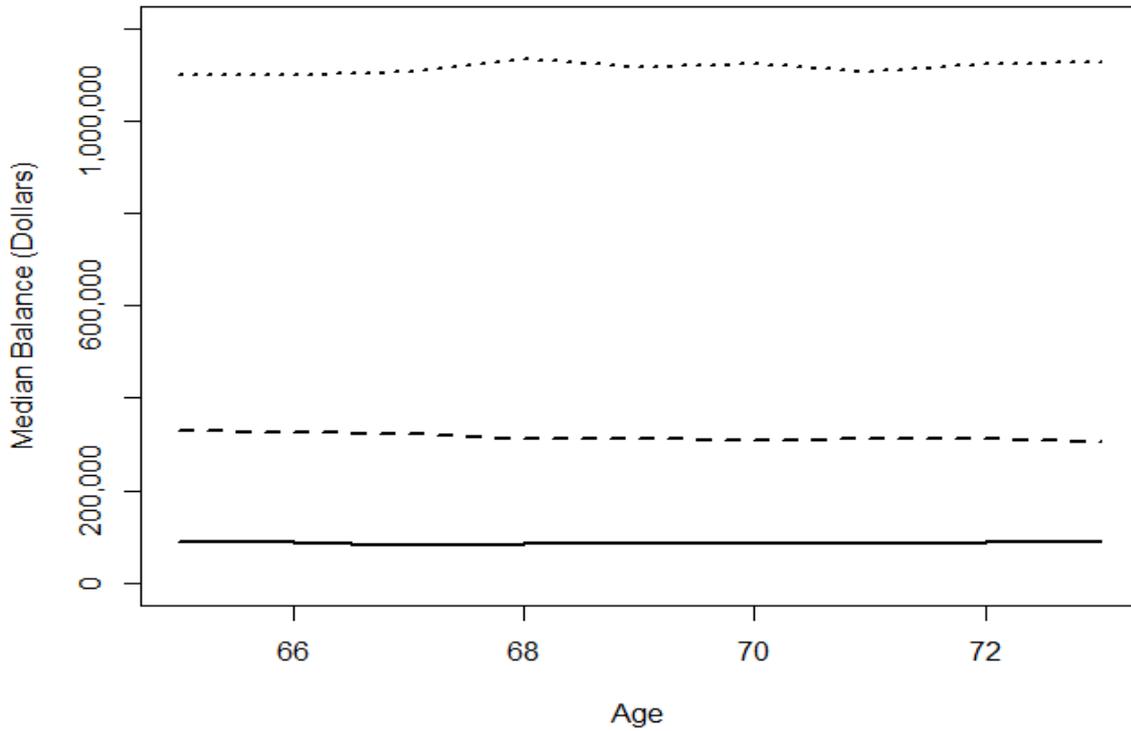


Figure 20: Balances held by retirees with an SMSF only, split into groups based on the relative size of their balance in 2004 (the solid line represents those with low balances, the dashed line medium balances and the dotted line high balances).

SMSF Balances For Both

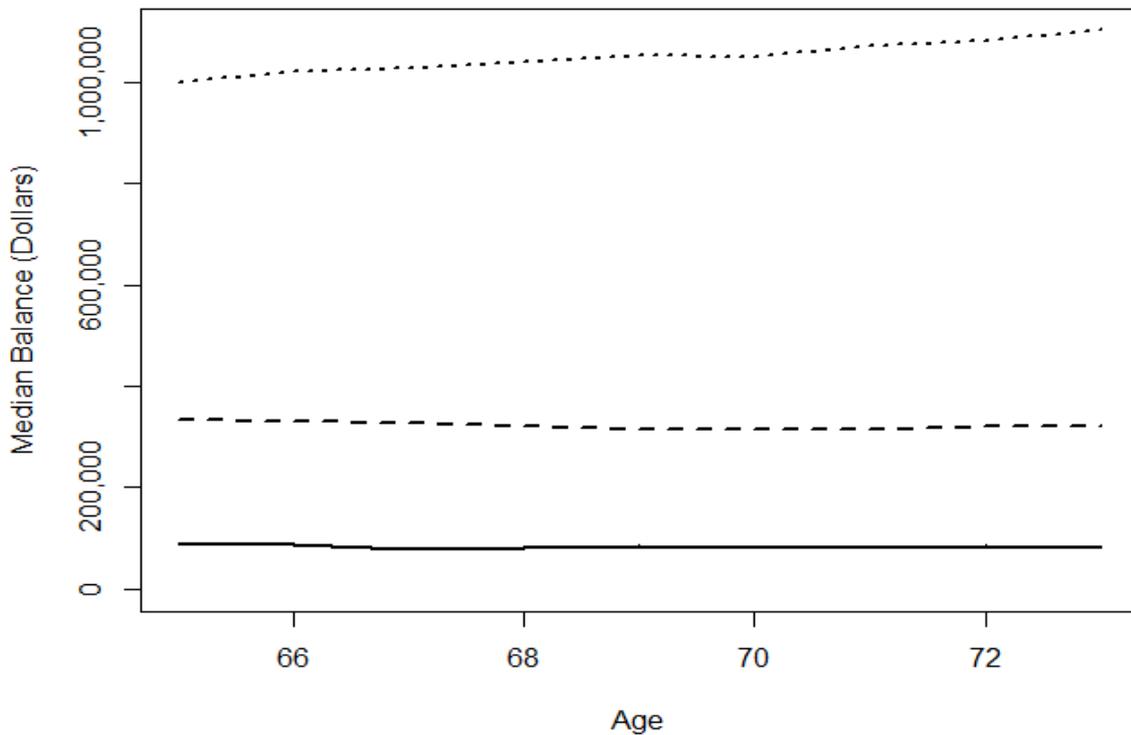


Figure 21: SMSF balances held by retirees with both an APRA and SMSF balance, split into groups based on the relative size of their balance in 2004 (the solid line represents those with low balances, the dashed line medium balances and the dotted line high balances).

Examining the net change of accounts that remain open provides a better measure of balance evolution among retirees. Among those with just an APRA fund the median balance change was positive, indicating that for most retirees investment returns exceeded withdrawals (Figure 22). For those who also had an SMSF, the median growth of their APRA fund balance was a little higher (Figure 23), suggesting they are withdrawing less.

APRA Only Balance Changes

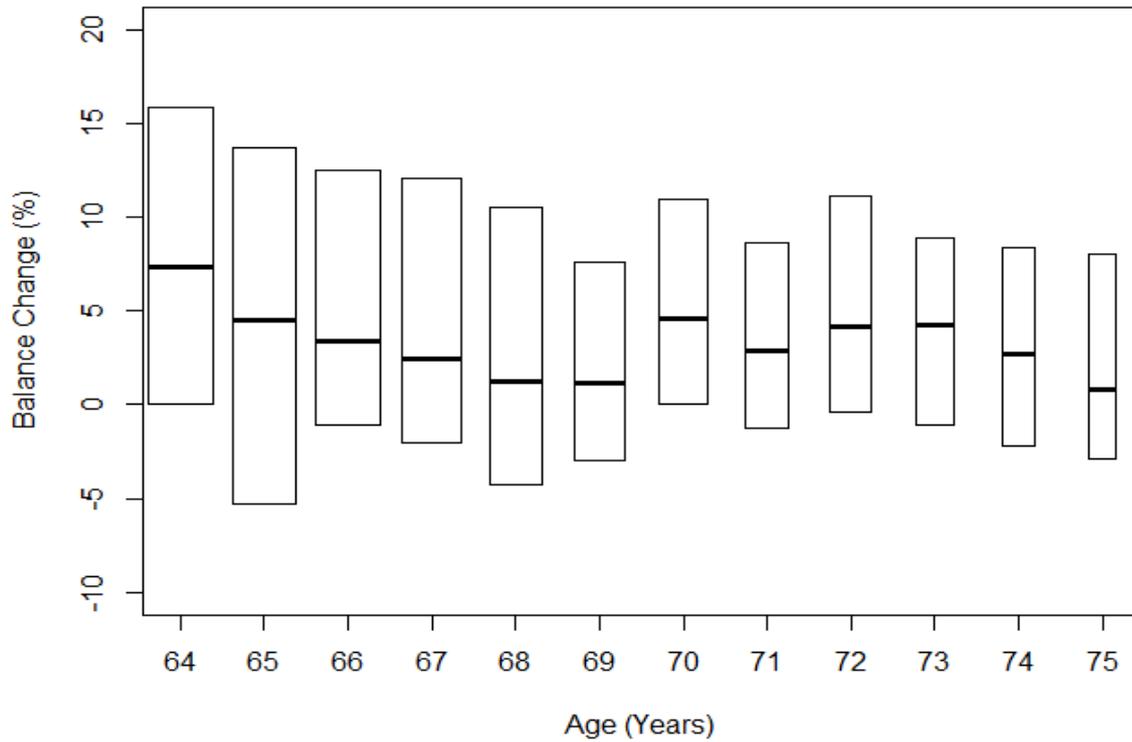


Figure 22: Net balance changes for retirees with just an APRA fund (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

APRA Balance Changes For Both

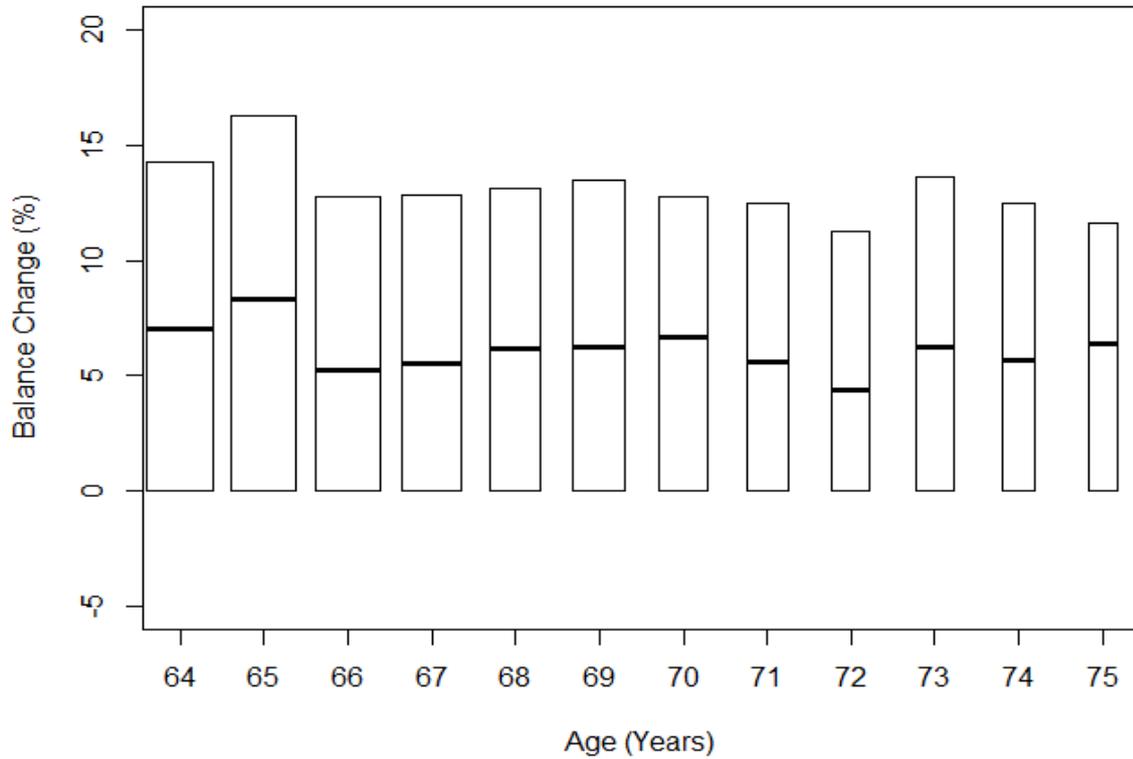


Figure 23: Net APRA fund balance changes for retirees with both an APRA fund and SMSF (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

Across all ages represented in the dataset, the median balance change in SMSF accounts is positive (Figure 24, Figure 25), indicating that investment returns are exceeding withdrawals for most retirees in most years. However, there is considerable variation. The lower quartile is consistently below zero, indicating that in more than 25% of cases withdrawals exceeded investment returns. Balance growth rate appears to decline from the age of 75 (which coincides with an increase in the minimum withdrawal rate), but the data become very thin, and nothing can be reliably inferred for members in their 80s.

SMSF Only Balance Changes

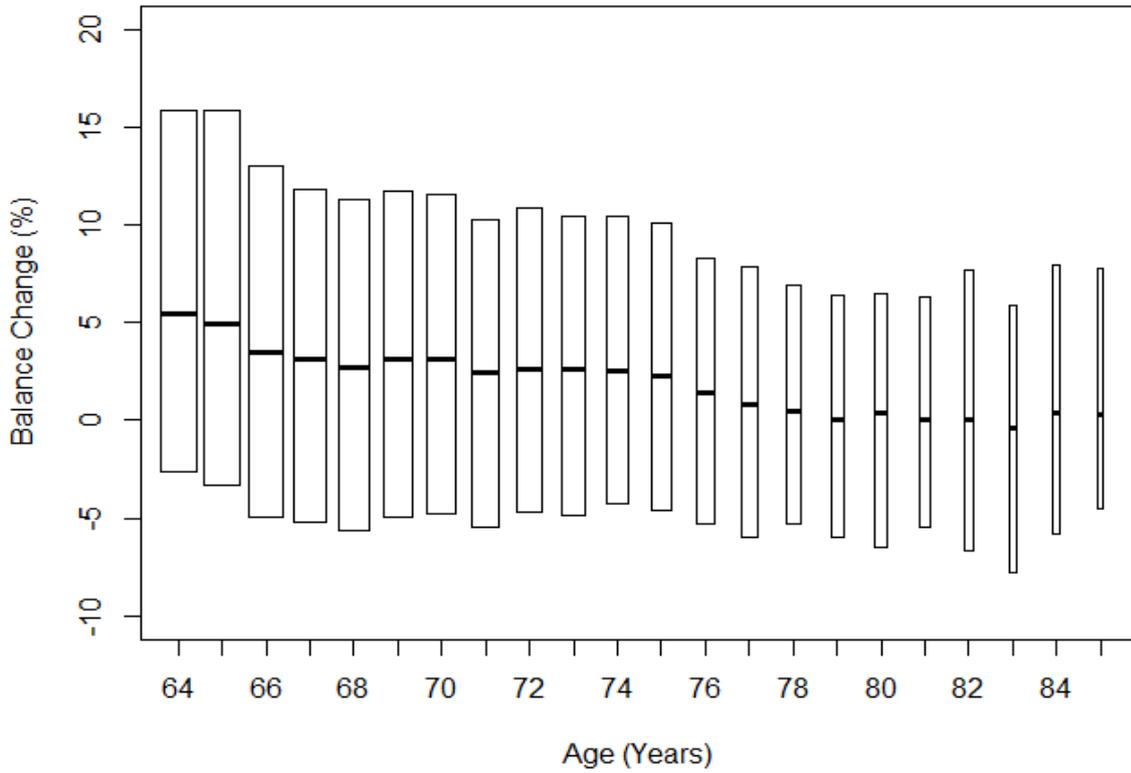


Figure 24: Net balance changes for retirees with just an SMSF (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

SMSF Balance Changes For Both

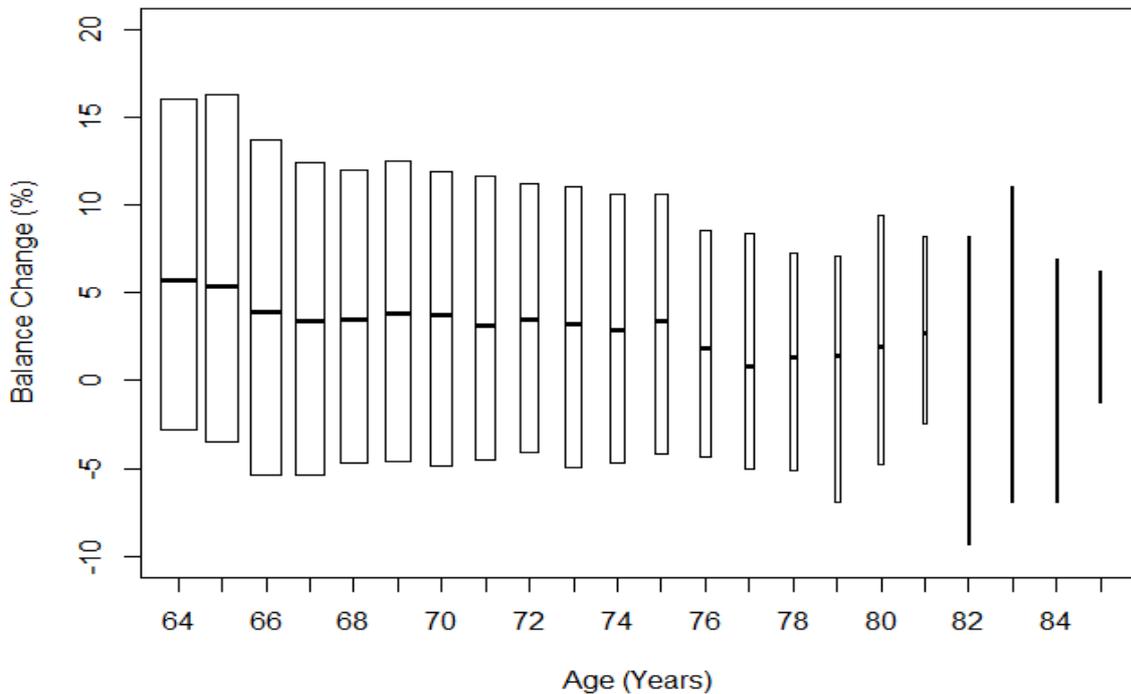


Figure 25: Net SMSF balance changes for retirees with both an APRA and SMSF balance (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

Dataset two: APRA-fund

The 2,600 retirees represented in the second dataset had a median age of 65 (Figure 26) at the start of the dataset (June 2010). The data provide a detailed picture of drawdown activity by retirees aged between 60 and 75 over the five years, but older ages are not well represented.

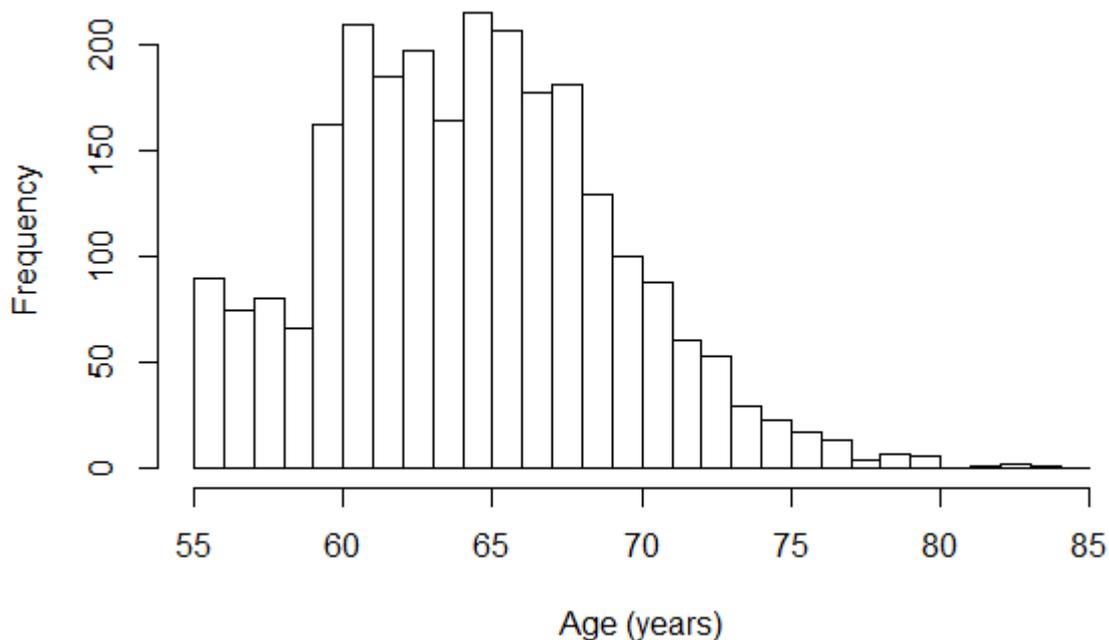


Figure 26: Frequency distribution of age for the retirees covered in the second dataset.

The median account balance in June 2010 was \$151,000 (Figure 27), which had risen to \$194,000 by June 2015.

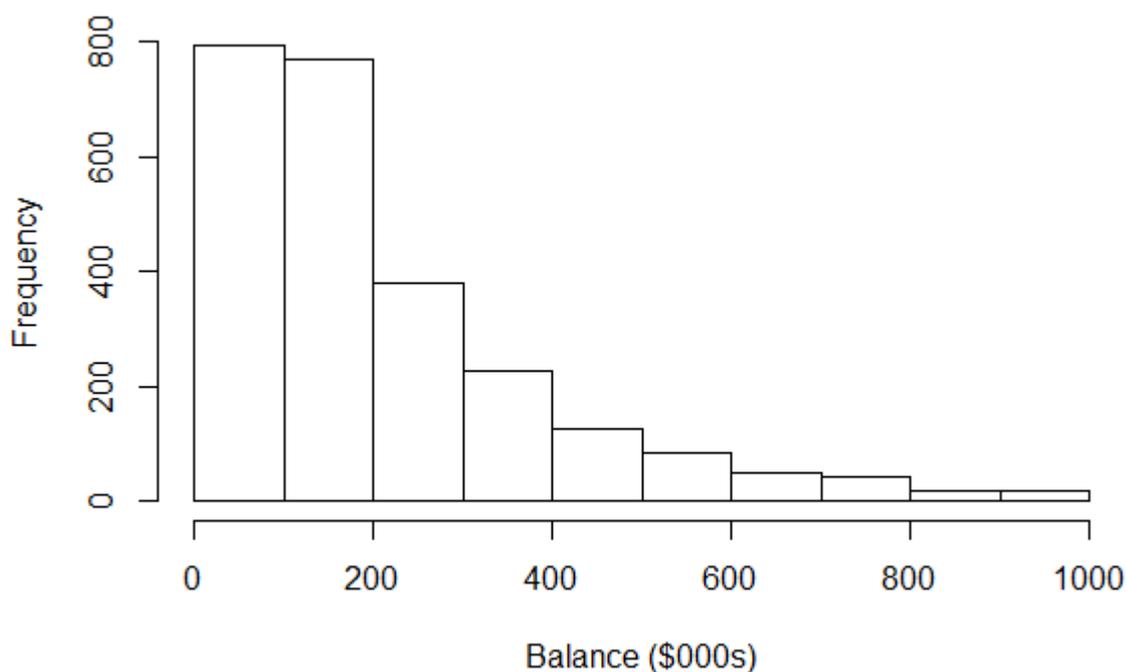


Figure 27: Frequency distribution of initial account balances in the second dataset.

Median withdrawal rates varied by age (Figure 28). They were relatively high among the small number of retirees aged less than 65, but dropped close to the minimum rate of 5% at 65 (though note for some of the years covered by this dataset the minimum rates were lower). In 2015 the median withdrawal was 0.56 percentage points above the minimum. In earlier years, when the minima had been reduced, this difference was greater; for example in 2010 when the minimum rates were halved the median withdrawal was 3.75 percentage points higher than the reduced minimum. While we do not have data for the period prior to the reduction, our data suggest that retirees are more likely to stick around the regular minimum withdrawal rates, rather than actively tracking the minimum as it was adjusted. However, the fluctuating nature of superannuation returns may prompt active decision-making. Considering the financial years ending in 2014 and 2015, 36% of retirees withdrew the same dollar amount while 27% stuck to the same percentage. There was little evidence of retirees being drawn to round numbers; across the dataset 16% of withdrawals were in multiples of \$1,000 and 38% in multiples of \$50.

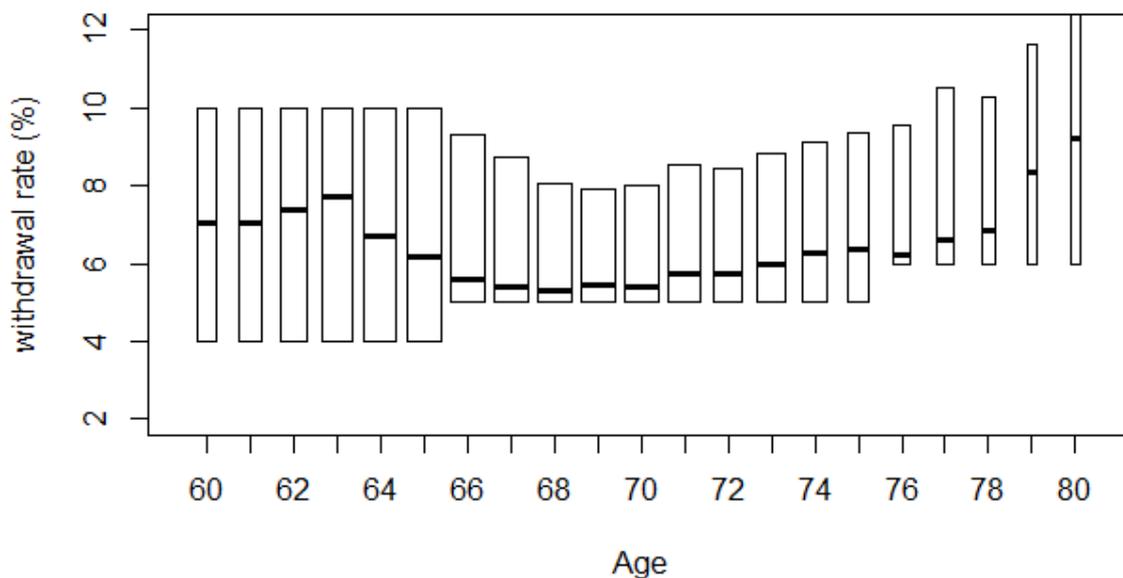


Figure 28: Withdrawal rates, as a proportion of account balance, by age (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

Individuals with larger balances tended to have lower withdrawal rates. The median withdrawal rate for balances over \$200,000 was 5.5%, compared to 7.3% for those under \$200,000 (and 6.0% overall). As with the ATO dataset, most balances showed positive net growth in most years. Figure 29 shows median balance growth by age. Across the dataset the median net annual balance change was 0.6%, indicating that investment returns slightly exceeded withdrawals in most cases. However, there was considerable variation. For those with balances below \$200,000 the median balance change was -0.4% per year; for larger balances it was 3.2%.

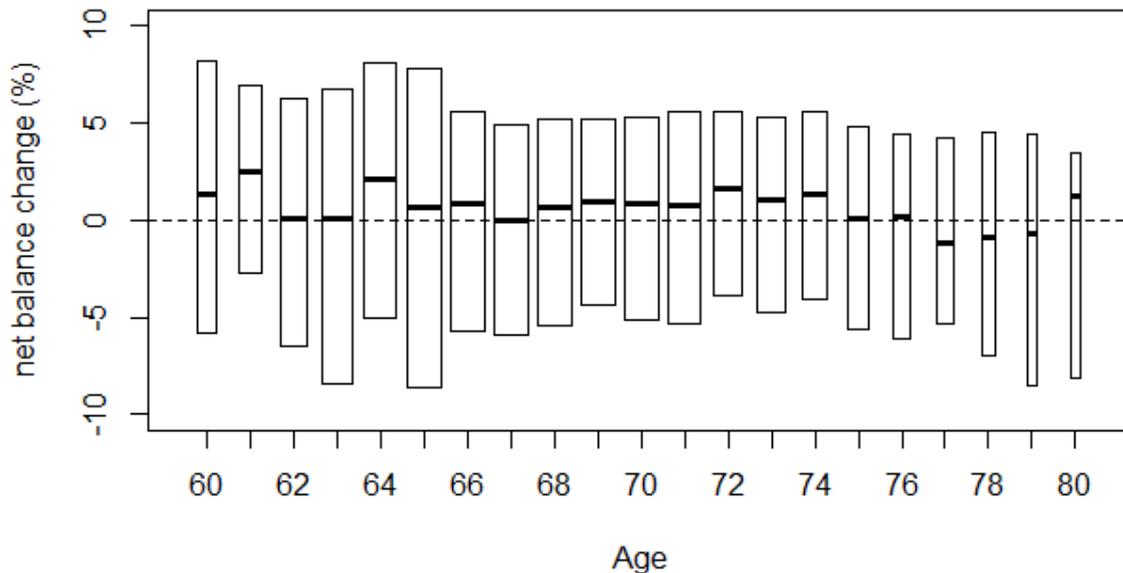


Figure 29: Net balance change, as a proportion of account balance, by age (solid lines indicate the median, box height represents the interquartile range, box width indicates relative sample size).

A panel regression model was applied to investigate withdrawal behaviour in greater detail (see appendix for details). The model confirmed that withdrawal rates were significantly negatively correlated with balance (i.e. the higher the balance, the lower the withdrawal rate). Men withdrew significantly more than women (median of 6.4% vs 5.4%), which may reflect their lower life expectancies. Withdrawal percentages were positively correlated with investment returns in the current, but not the previous, financial year, suggesting some retirees may continually adjust their withdrawals in response to market conditions. The net rate of balance change was significantly correlated with balance, which may be due to individuals with larger balances paying proportionally lower fees or selecting different investment options. Growth rate also declined with age, perhaps reflecting increasingly conservative asset allocations.

Discussion

These data indicate that most retirees in their 60s and 70s drawdown on their account-based pensions at modest rates. This observation is consistent across both SMSF and APRA funds, and broadly holds for different sized balances (though smaller balances are drawn down somewhat faster than larger ones). There is no evidence of widespread rapid drawdown of superannuation. In fact, if retirees continue to withdraw close to the minimum amounts each year, most will die with substantial amounts unspent. These results correspond with the findings of Wu et al. (2014) that assets are only drawn down very slowly in retirement.

However, it is important to note that the data analysed here only cover retirees in their 60s and 70s. As superannuants continue to age withdrawal rates must increase (e.g. at 85 the minimum withdrawal is 9%). The data also cover a time period in which there were many years with strong investment returns, which also cannot necessarily be expected to continue into the future. Therefore the observation of many (though far from all) retirees growing their superannuation balances is likely to be restricted to younger age groups and is dependent on strong investment returns. The observed growth is also in nominal, rather than real (i.e. inflation-adjusted) terms.

The account-based pension system requires retirees to make complex decisions. Longevity and future expenses are highly uncertain, particularly for younger retirees. Defining the optimal rate of

drawdown under such uncertainty is therefore a great challenge. People are generally risk averse, and particularly dislike making decisions under uncertainty (Kahneman and Tversky 1979; Tversky and Shafir 1993; Shafir et al. 1993). The data suggest that for many retirees the minimum withdrawal rates have come to represent a default option. When faced with a complex decision under uncertainty, many people will try to avoid it altogether; where that is not possible they will look for a default (Reeson and Dunstall 2009). Once a default or status quo option has been identified it acts as a powerful magnet (Samuelson and Zeckhauser 1988; Kahneman et al. 1991; Johnson et al. 1993).

An individual's account-based pension contains what is, for that individual, a large sum of money which they have spent many years saving. Drawing down on a non-replenishing resource may be a psychological challenge, particularly in the context of superannuation which is primarily discussed in a savings rather than a consumption frame. Retaining a lump sum, rather than converting it into an income stream, may give people an illusion of wealth (Goldstein et al. 2016); it also allows ongoing choice, which is valued for its own sake (Bobadilla-Suarez et al. 2016).

Retirees with account-based pensions are essentially self-insuring for longevity risk. Managing such risks at the individual level is costly and inefficient, as it necessitates retaining a large proportion of savings, and only those who live to a particularly old age will get to spend all of their savings. It is likely that the perceived costs are substantially reduced by the fact that unspent balance can be passed on as a bequest. While products such as annuities can in theory manage longevity risk, in practice people may consider them to be more risky, as the realised value of an annuity is entirely dependent on lifespan (Hu and Scott 2007).

Ralston and Maddock (2015) discuss elements of post-retirement income, noting that retirees are diverse, but need more information and advice; they also suggest that well designed default options would help many retirees better manage their finances. There may also be opportunities to improve the way annuities and other income stream products are designed and communicated. For example, varying attributes such as timing, duration and increments doubled the proportion of people who selected an annuity in a hypothetical choice experiment (Shu et al. 2016). Framing decisions in terms of consumption rather than investment has also been shown to increase the attractiveness of annuities (Brown et al. 2013).

The data analysed here suggest that Australian retirees are more likely to draw down their superannuation slowly to ensure it lasts their whole lifetime than to spend more rapidly in order to increase their age pension entitlement. However, the same may not be true of older retirees, or future cohorts of retirees. The data required to understand evolving patterns of retiree behaviour are routinely collected by government and industry, so further and more detailed analyses ought to be possible. As most younger retirees have partners, future analyses would also do well to consider the household, rather than just the individual, as this is the level where most financial decisions are likely to be made.

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Appendix

Dataset two contained repeated observations of approximately 2,600 retirees over five financial years, which were analysed with a random effect linear panel regression model (using the plm package in R). Independent variables included account balance, gender, age (in years at the start of each financial year), investment returns in the previous period, time since retirement, year (as a categorical variable) and a measure of the relative socio-economic advantage of a person's 2015 postcode (the Australian Bureau of Statistics Socio-Economic Index for Areas (SEIFA) index of relative socio-economic advantage and disadvantage, drawn from the 2011 census).

The first model used withdrawal as a percentage of balance (i.e., withdrawal rate) as the dependent variable. SEIFA decile, time since retirement and age proved insignificant and were dropped from the model. Investment return as initially included as a lagged variable, which proved non-significant. However, return in the current period was significant. Withdrawal rates varied significantly between years, in part due to changes in minimum withdrawal rates. Table 2 shows the final parameter estimates.

Table 2: Panel regression results for withdrawal rate; reference case is female in 2011.

	Estimate	Std. Error	t-value	Pr (> t)
(Intercept)	7.0384e+00	3.1895e+00	2.2068	0.0273514 *
Balance	-9.6259e-06	7.1259e-07	-13.5083	< 2.2e-16 ***
Gender (male)	1.3558e+00	4.7403e-01	2.8603	0.0042408 **
Return	1.1109e+01	2.2539e-01	49.2871	< 2.2e-16 ***
Age	2.1351e-02	4.7907e-02	0.4457	0.6558439
Year (2012)	1.0789e+00	3.0028e-01	3.5930	0.0003284 ***
Year (2013)	1.1728e-01	3.1906e-01	0.3676	0.7131905
Year (2014)	1.3319e+00	3.4140e-01	3.9012	9.630e-05 ***
Year (2015)	1.5081e+00	3.6885e-01	4.0886	4.372e-05 ***

The second model considered net balance change as the dependent variable. Time since retirement proved insignificant and was dropped; the remaining variables are shown in Table 3 below.

Table 3: Panel regression results for net balance change; reference case is female in 2011.

	Estimate	Std. Error	t-value	Pr(> t)
(Intercept)	2.4142e-01	5.9530e-02	4.0554	5.039e-05 ***
Balance	1.2035e-07	1.3799e-08	8.7222	< 2.2e-16 ***
SEIFA	2.7588e-03	1.5995e-03	1.7248	0.0845951 ^
Gender (male)	-1.1567e-02	8.5097e-03	-1.3593	0.1740849
Age	-3.7928e-03	8.6713e-04	-4.3740	1.231e-05 ***
Year (2012)	-6.5534e-02	1.2751e-02	-5.1397	2.799e-07 ***
Year (2013)	4.9942e-02	1.3079e-02	3.8184	0.0001351 ***
Year (2014)	3.3813e-02	1.3369e-02	2.5291	0.0114484 *
Year (2015)	1.2612e-02	1.3724e-02	0.9190	0.3581302