4 February 2020

Retirement Income Review Secretariat
The Treasury
Langton Crescent
PARKES ACT 2600

By email: retirementincomereview@treasury.gov.au

Dear Secretariat,

Retirement Income Review

Introduction

The Actuaries Institute (the Institute) welcomes the opportunity to contribute to the important fact base being developed by the Retirement Income Review Panel (the Panel). Actuaries have a long tradition of participating in the retirement incomes system and contributing to public policy.

Given the short timeframe within which submissions needed to be made, the Institute has not sought to undertake additional research as part of its response to the consultation paper.

Instead, we have referenced previous research undertaken by the Institute and its members when responding to the specific questions raised by the Panel. This submission also does not seek to address every question raised by the Panel but focuses on a limited set of questions. Individual actuaries may provide their own views on other issues through their own submissions.

The Institute would be happy to assist the Panel if it requires further information regarding the matters raised in this submission or, if it would benefit from gaining actuarial insights into other aspects of the review.

Actuaries and the Actuaries Institute have provided a number of policy publications in recent years that have sought to discuss or measure the impact and risks of long term trends on the retirement incomes system. We provide for the panel links below to many of these publications to assist in the preparation of your evidence base:

- *Australia's Longevity Tsunami, What should we do? White Paper, August 2012*
  https://www.actuaries.asn.au/Library/Submissions/Opinion/2012/AI-WP-Longevity-WEB050912.pdf
- *Exploring Retiree Mortality, Research Paper, December 2018*
  https://www.actuaries.asn.au/Library/Opinion/2018/AIExploringRetireeMortalityFINAL.pdf
- *The Challenge of Longevity Risk, Making Retirement Income Last a Lifetime, Research Paper, October 2015*
  https://www.actuaries.asn.au/Library/Opinion/2015/InternationalLongevityRiskPaper.pdf
- *For Richer, For Poorer, White Paper, August 2015*
  https://www.actuaries.asn.au/Library/Opinion/2015/ForRicherForPoorerRetirementIncomes2WEB.pdf

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- *Unlocking Housing Wealth - options to meet retirement needs, Green Paper, March 2016,* https://www.actuaries.asn.au/Library/Opinion/2016/AIHOUSINGGPwebMres.pdf
- *Options for an Improved and Integrated System of Retirement, Green Paper, August 2019* https://actuaries.asn.au/Library/Opinion/2019/RETIREMENTINCOMESGREENPAPERFINALWEB.pdf
- *The Importance of Accurate Life Expectancy Calculations in Retirement Advice,* https://actuaries.asn.au/Library/Miscellaneous/2019/AccurateLifeCalculationsNovember2019.pdf

Purpose of the system and the role of the pillars

Question 2: Is the objective of the Australian retirement income system well understood within the community? What evidence is there to support this?

We note that the consultation paper puts forward an objective of the system to provide an *"adequate income in retirement, in a way that is sustainable for current and future generations"*.

We note that the Superannuation Objective Bill was first introduced into parliament in 2016 but has not yet been passed. In the Institute's submission regarding this bill, we suggested it would be better to provide an objective for the entire retirement incomes system as well as complementary objectives for each pillar or component of the system[1]. Given these objectives are not clearly defined it is unlikely that the general community understands the objective of the system.

A key issue is that the objective of the Age Pension system may first need to be firmly determined. In particular, is the Age Pension a safety net or a guaranteed pillar that all retirees can depend on and build their retirement income plans around? On the one hand, there is a belief that the Age Pension is an entitlement, but on the other, there is a belief among younger generations that the Age Pension may not be there when they retire.

Ideally, every Australian should have a confident answer to the question "what (total) income can I rely on receiving in retirement?". The issue of sustainability of the system should also take into account the various risks to individual retirement incomes rather than simply the impact on Government finances, employers or funds from an ageing population.

Accumulation based superannuation puts inflation, investment, longevity, expense and other risks into the individual's hands. In some cases, there is a real risk that the Age Pension plus an individual's superannuation savings combined may not be sufficient to provide an adequate retirement income (as defined by each individual or couple), due to a combination of factors including inadequate contributions during working lives, insufficient investment returns, a reluctance to spend because of the uncertainty about how long they will live, or because people outlive their accumulated superannuation.

[1] https://actuaries.asn.au/Library/Submissions/Superannuation/2016/742016SuperannuationObjective.pdf

Question 3: In what areas of the retirement income system is there a need to improve understanding of its operation?

Every Australian needs a clear understanding of:

- How much total income they can expect to receive in retirement (which could be aided by making holistic retirement projections on superannuation statements)
- How will this change if they contribute more/less tosuperannuation
- How much Age Pension can they expect to receive and how does this interact with any additional savings they make
- What impact could other simple levers have on retirement income (net investment returns, savings rates etc.)
- How the superannuation and the Age Pension interact with the Aged Care system

The above questions are vital to making confident spend/save decisions during a person's working life and also in retirement. The answers have to incorporate each household's Age Pension income (if any) which is assessed at household level including non-super resources.

Actuarial working parties have contributed thought leadership on how to answer these questions, for example the paper presented at the Actuaries Financial Services Forum in 2016, 'Good Practice Principles for Retirement Phase Modelling'[2].

There has been an effort by industry and ASIC to raise the understanding of the retirement income and superannuation systems by the average Australian, however, this will always be hampered by the complexity (particularly of the means testing rules which can produce highly irregular cash flows as the value of assessable assets fluctuates with markets over time).

To answer a basic question such as "How much can I spend in retirement with 90% confidence it will last for life" can entail millions of stress-testing calculations, particularly for means-tested retirees who use individual account-based retirement products. A growing number of financial advisers use the necessary stochastic software to give advice that takes into account probability, but they are still in the minority.

[2] https://www.actuaries.asn.au/Library/Events/FSF/2016/HenningtonLangtonRetirement.pdf

Question 5: The Panel has been asked to identify the role of each of the pillars in the retirement income system. In considering this question, what should each pillar seek to deliver and for whom?

The recent Green Paper, *Options for an Integrated and Improved System of Retirement,* outlined roles for the pillars of the retirement income system. An extract from Appendix A, Objectives of Australia's Retirement Incomes System is below:

> *"Self-reliance for retirement has its own merit as well as reducing fiscal pressures. From an intergenerational perspective, it is important that the costs of the Age Pension and taxation support for superannuation are sustainable over the longer term.*
>
> *It is also critical that the purposes or objectives of the main three sources of income (or pillars – the Age Pension, compulsory superannuation and voluntary savings in- and out-side of superannuation) are clear and well understood by the community.*
>
> *The objective of the **Age Pension** (or safety net) is to provide a modest level of income to those who have attained a certain age and do not have a sufficient level of financial resources to provide a minimum standard of living during their retirement years. That is, the level of the pension and the related benefits should ensure no older Australian lives in poverty. The operation of the means tests represents an important policy in determining the distribution of the pension as well as its relationship with superannuation and other savings.*
>
> *The objective of **compulsory superannuation** is to ensure that all working Australians set aside a proportion of their current income for retirement. Over a full working career, compulsory superannuation contributions should be sufficient to provide a level of retirement income, together with any Age Pension, that enables a living standard to be maintained throughout retirement that is no greater than their 'average living standard' during most of their working years when contributions were made. Consideration could be given to a default level of contribution in excess of the compulsory level to bring living standards to a level equal to the 'average living standard'.*
>
> *The objective of **voluntary superannuation** is to provide flexibility for individuals to make additional contributions (as may be appropriate) that can improve their retirement lifestyle and thereby offset any shortcomings in their compulsory superannuation benefit. These could arise for several reasons including periods out of the workforce, improvements in community living standards, increases in longevity and adverse market movements."*

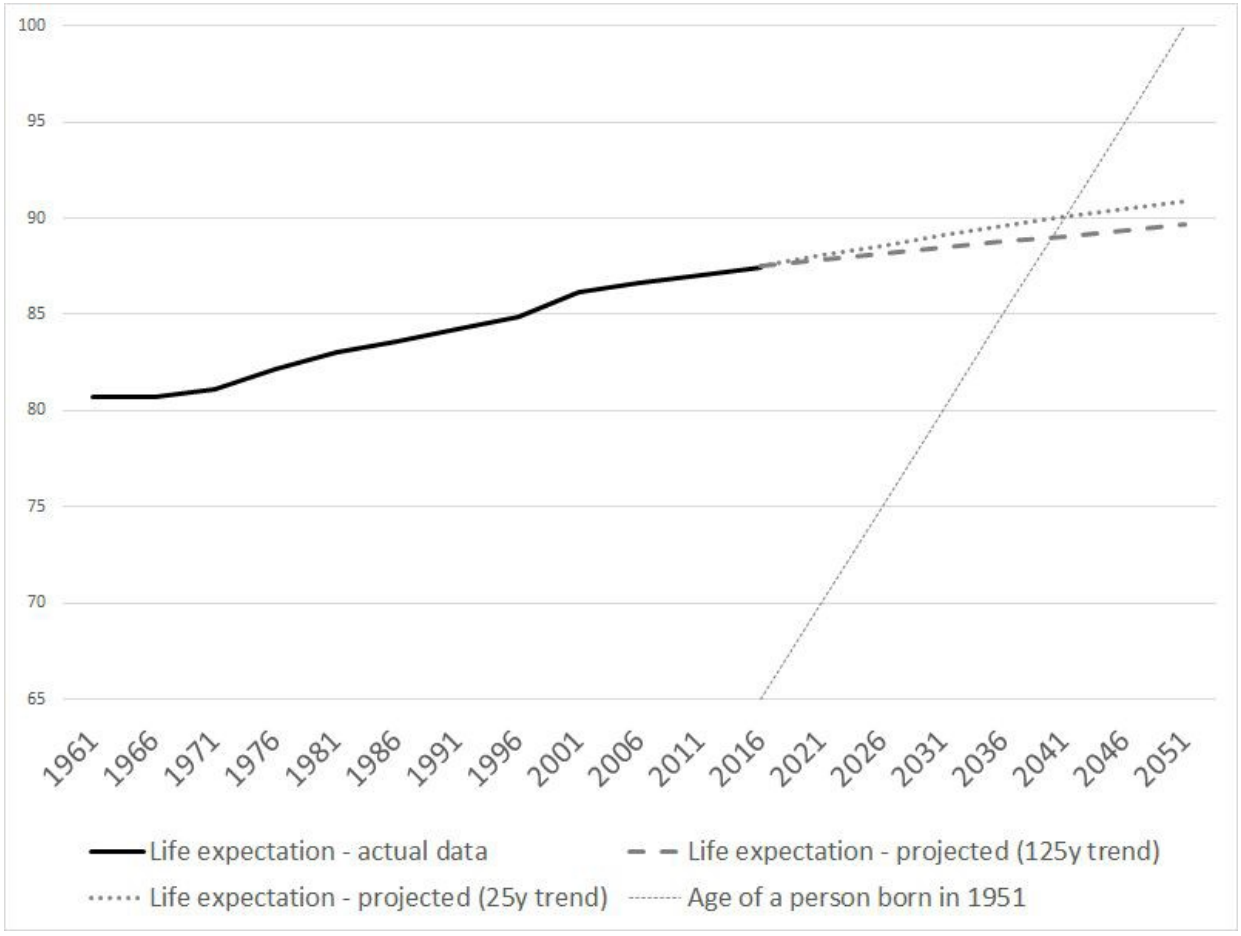
The changing Australian landscape

Question 7: Demographic, labour market, and home ownership trends affect the operation of the retirement income system now and into the future. What are the main impacts of these trends? To what extent is the system responsive to these trends? Are there additional trends which the Review should consider when assessing how the system is performing and will perform in the future?

The Actuaries Institute Papers referred to in the introduction to this submission discuss demographic and home ownership issues in detail. In particular we would like to draw the Panel's attention to the issues of:

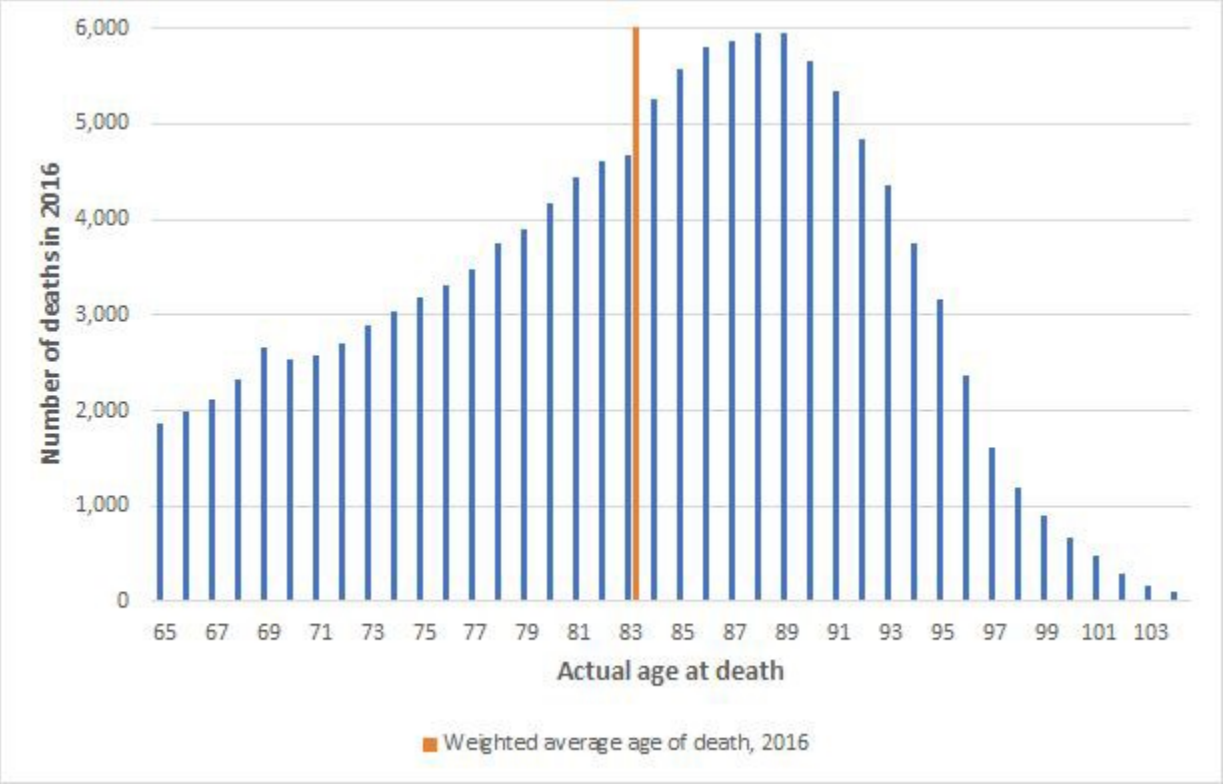
- **Systematic longevity risk:** Increasing life expectancy and longevity from mortality improvements have the potential to challenge social security systems and to strain the retirement incomes system.
    - Chart 1 below shows how average female lifespans (typically the longer living member of a household) have increased since the mid 1960s and, using the latest Australian Life tables (2015-17) are projected to continue doing so. Historically life expectancy improvements have often been underestimated.
    - See also, *Australia's Longevity Tsunami, Exploring Retiree Mortality, The Challenge of Longevity Risk* and *The Importance of Accurate Life Expectancy Calculations in Retirement Advice.*
- **Idiosyncratic longevity risk:** Each individual faces a great deal of uncertainty about their own lifespan.
    - Chart 2 below shows the wide dispersion of actual ages of death for Australians over age 65. Individual retirees have little knowledge of whether they will be one of the ones to die in their 70s or in their late 90s, for example.
    - This makes consumption decisions in retirement extremely difficult. Large pools of lives (such as an insurance company or defined benefit fund) can benefit from probability theory such as the 'law of large numbers'. This lets them plan using averages. However, individuals are fully exposed to idiosyncratic risk. They have to be able to absorb the full range of possible scenarios in order to have confidence.
    - Data shows that the typical Australian only draws small amounts from their retirement wealth on average, potentially "self-insuring" their mortality risk.
- **Housing:** The white paper, *For Richer, For Poorer,* showed different generations of Australians are likely to have similar overall wealth at retirement but the composition of wealth will shift. Home ownership is becoming increasingly difficult for those on low incomes to achieve and more Australians will enter retirement with mortgage debt. Superannuation balances will grow, but the impact will be limited if it is simply used to pay off mortgage debt at retirement.
    - See *For Richer, For Poorer*, *Unlocking Housing Wealth - options to meet retirement needs* and *Options for an Improved and Integrated System of Retirement*.

Chart 1: Actual and projected average lifespan - female age 65



Source: Australian Life Tables 2015-17, Australian Government Actuary

Chart 2: Actual age of death of individual retirees who died during 2016[3]



We note that the Institute is currently undertaking two additional areas of research which will discuss the impact of:

- The Gig Economy, and
- Intergenerational Equity.

These papers are unlikely to be released prior to March 2020 so may not be able to contribute to the Panel's final paper. However, we will provide the secretariat/Treasury with copies of the papers on release.

Principles for assessing the system

Question 8: Are the principles proposed by the Panel (adequacy, equity, sustainability, and cohesion) appropriate benchmarks for assessing the outcomes the retirement income system is delivering for Australians now and in the future? Are there other principles that should be included?

We agree with the broad policy principles set out by the Panel.

[3] https://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/3302.02016?OpenDocument

The Institute has developed its own Retirement Income Policy Principles in 2014. This document is currently under review and the Institute is happy to provide the Panel with a revised version once it has been finalised.

We note there is some overlap between the differences in principles which may largely achieve the same outcome. For example, Cohesion and Efficiency will be related as a system that is not well integrated is unlikely to be efficient.

Our policy principles include the additional principles of:

- **Flexibility** should be allowed within the system so that individuals can exercise choice.
- **Simplicity** should be a goal of the system to reduce the need for advice and aid individual understanding of the system.
- The regulatory framework should also promote **competition** and **innovation**.

Table 1: Contrast of Policy Principles

Retirement Income Review Principles	**Actuaries Institute Retirement Incomes Policy Principles - November 2014**
Sustainability **Adequacy**	**Sustainability**, including a long-term regulatory outlook focused on providing retirees with a reliable, secure and **adequate income** flow during retirement.
Equity	**Equity**, particularly in relation to the combined cost to the taxpayer of the Age Pension and various tax concessions and incentives, as well as inter-generational equity.
Cohesion	**Efficiency**, so that the cost to taxpayers is efficiently meeting the core objective of providing adequate retirement incomes.
	Flexibility within regulation to reflect individuals' different retirement income needs and varying capacity to exercise choice.
	Simplicity, particularly in retirement so that, to the extent possible, retirees can optimise their position without having to obtain expensive advice.

	Regulatory frameworks which support **competition** and do not unreasonably impede **innovation**, including an appropriate balance between the social objectives of regulation and the implications for industry including the cost of compliance.

Question 9: How does the system balance each of the principles and the trade-offs between principles (e.g. sustainability and adequacy) under current settings? What is the evidence to support whether the current balance is appropriate?

The Australian retirement income system is often rated as one of the best performing retirement income systems in the world, though ratings could be improved in the retirement space by ensuring retirement benefits are taken in the form of income[4]. However, the system is complex, and contains some anomalies, often the result of incremental policy changes that have been built up over time.

The system currently balances the principles through complexity and regular tinkering which is sometimes retrospectively applied to retirees who are unable to change their financial position easily.

This complexity has led to the everyday Australian not being able to understand the key elements of the system without financial advice. There has been almost constant "tinkering" to the system over many years which further undermines public trust in the system.

Adequacy

Question 10: What should the Panel consider when assessing the adequacy of the retirement income system?

When assessing the adequacy of the retirement income system (not just the superannuation system), we think the Panel should consider whether the system:

- provides sufficient income to each retiree to fund basic needs for living, and
- allows retirees to afford a similar standard of living as they had before retirement (appropriate to their needs and objectives). More importantly, the assessment should look at the whole of retirement, not just the first year or the first few years in retirement.

Absolute and relative measures of adequacy serve different purposes. Absolute measures are often used to assess to what extent the retirement income system relieves poverty. Relative measures are often used when assessing whether the system would allow retirees to maintain the standard of living they experienced during their working years.

[4] https://info.mercer.com/rs/521-DEV-513/images/MMGPI%202019%20Full%20Report.pdf

Given that the Australian Retirement Income System includes both the Age Pension as a poverty relief pillar (transferring wealth from the rich/higher income to the poor/lower income) and the Superannuation system as a compulsory savings scheme (transferring wealth from the working years to retirement), the objective of the system as a whole should cover both purposes and hence both types of measures should be examined when assessing its adequacy.

It is common to see adequacy of retirement income assessed using the first year (or the first few years) of retirement income. However, retirement outcomes are dynamic and dependent on the drawdown pattern, as well as investment returns, means testing rules and how long the retiree(s) live. Assessing adequacy throughout the entire retirement period is particularly important for Australian retirees for three reasons.

First, unlike many European countries with a flat pension, the means testing feature of the Age Pension often leads to highly irregular, time-varying cashflows.

Second, the statutory minimum drawdown rates are different for different ages, leading to stepwise changes to the income from superannuation savings. Chart 3 later in this submission shows that this can lead to a decrease in real income (assuming a balanced fund with a 70% allocation to growth assets) for those who live beyond say, age 95.

Third, as there is no limit on the maximum drawdown the potential for the variability of retirement income is large which implies the adequacy can be dramatically different at different ages.

Question 11: What measures should the Panel use to assess whether the retirement income system allows Australians to achieve an adequate retirement income? Should the system be measured against whether it delivers a minimum income level in retirement; reflects a proportion of pre-retirement income (and if so, what period of pre-retirement income); or matches a certain level of expenses?

As discussed above, both absolute measures and relative measures should be used to assess the adequacy of the retirement income system. Some actuaries have suggested that hybrid measures, for example $X + Y% of salary, may be preferable to provide an overall single measure to address both elements (though little formal work has been done to date).

Absolute benchmarks can be used to examine whether the system delivers a level of income that is sufficient to fund basic living or a comfortable retirement. For example:

- The poverty line,
- The ASFA modest retirement standard,
- The ASFA comfortable retirement standard.

To assess to what extent retirees can maintain their standard of living after retirement a replacement rate can be used. Internationally, 65-75% is generally the range applied as the needs for income are often lower in retirement compared with working years.[5] It should also be noted that the replacement rate should not be calculated based on the final year's pre-retirement income. This is because the final year's income can be very volatile. To represent the living

5. This is found both in Australian and other developed countries.

standard before retirement, different measures have been used in existing studies, such as,

- the average of the last 3-5 years of full-time income;
- average income of the working years; and
- the peak income of the working years.

More importantly, both the absolute and the relative measures should be calculated not only for the first year of retirement but also throughout retirement. For instance, every 5 years after retirement.

The calculation of the above measures is often undertaken in real terms to control for the impact of future inflation. There is often debate on whether indexation of future needs should be based on wage inflation (e.g. AWOTE) or price inflation (e.g. CPI). The Actuaries Institute has a Practice Guideline 499.02 for Projected Retirement Benefit Illustrations[6]. We recommend that:

- AWOTE should be used as the indexation assumption during working years; and
- It is acceptable to use either AWOTE or CPI for the indexation assumption during retirement.

The above assumptions are set because, over the long term, population living standards tend to keep pace with wage inflation. An individual's salary increases according to their own career (e.g. including promotions) as well as population wage inflation. A household's living standard is a function of this as well as other personal factors. There is growing evidence that once an individual retires, their personal expenditure pattern may track CPI (or less) rather than to continue to increase with wage inflation of the general population.

Question 12: What evidence is available to assess whether retirees have an adequate level of income?

There is little empirical study assessing the adequacy of the retirement income system in a comprehensive manner. There are some surveys and studies looking at the consumption and saving behaviour of retirees using data from, for example:

- The ABS data on expenditure and income,
- The Household Expenditure Survey,
- The administrative data from Centrelink and
- The Household and Income Labour Dynamics survey (HILDA).

Most of these studies found that people tend to under-spend in retirement compared with what the life-cycle theory predicts, i.e. retirees spend less than their assets can actually support. A subgroup of retirees are even net savers. There is also some evidence that real consumption is lower after retirement compared with working ages and continues to decline during retirement. However, to an extent, adequacy ought to be defined in terms of the ability of the system to *provide* financial resources to finance retirement, rather than consumption, which is about the retirees' choice of how to *utilise* the financial resources they have. The latter is a function of the income received as well as

6. https://www.actuaries.asn.au/Library/Standards/SuperannuationEmployeeBenefits/2017/PG49902Jan18.pdf

many other rational factors such as risk preferences, bequest motives and healthcare expenditure, or behavioural (i.e. bounded rationality) factors such as survival expectations.

One reason for the little evidence on the adequacy of retirement income is due to the lack of good quality data. The ideal data for analysis in the space of retirement income would be a large-scale longitudinal data set which includes information on income, spending, demographics, financial status and self-reported variables (such as preferences on risk). The data set needs to be large enough to be representative across the broader population of retirees and to give enough statistical power to draw conclusions. The longitudinal nature of the data set (i.e. tracking the same group of individuals over time) would allow researchers to separately identify the changes due to different age cohort and due to changes over time. Several international examples are mentioned below.

Today, most of the Australian research is from the following sources of data, none of which meet all of the above requirements:

- **ATO:** the ATO data is large enough and longitudinal in nature. It also provides a good picture of the financial circumstances of individuals. However, as most households' retirement income is not taxed, data from ATO does not cover retirement income very well. Neither does it cover spending information and self-reported variables.
- **Administrative data from super funds:** this data is usually large enough and longitudinal in nature. It also provides some information on retirement income and asset drawdown. However, as funds are limited to the information held within the funds, funds data does not provide a complete picture of the financial circumstances of the members.
- **The Household and Income Labour Dynamics survey (HILDA)**: this is a national large-scale longitudinal data set. However, there are not many retirees in the sample as the survey was primarily designed for research on the working-age population. For example, there are approximately over 7,000 households in total in each wave of HILDA. However, only less than 1,000 households are retired and there are even fewer households for ages over 80. This is in contrast to the US Health and Retirement Survey (HRS) where there are around 50,000 retired households in each wave.
- **Other data from surveys of retirees:** many organisations such as the National Seniors also sample retirees. Most of these data sets are snapshots of the senior population and are not longitudinal in nature. The data from surveys undertaken by different organisations are often not comparable due to the differences in the survey setting.
- **Transaction data from banks:** some organisations get access to transactional data provided by banks. These data sets are usually large in scale and provide great insights to the consumption decision of retirees. However, they are limited to the information held by the bank so income paid to other bank accounts or mortgages with other banks would not be captured. The amount of information on demographics and self-reported variables are also limited.

For these reasons, we suggest that a national longitudinal data set similar to the US Health and Retirement Survey (HRS) is needed for Australia. This will greatly facilitate research on retirees in an ageing society and we have seen other countries putting efforts in this direction, for example The English Longitudinal Study of Ageing (ELSA), The Survey of Health, Ageing and Retirement in Europe

(SHARE) and The China Health and Retirement Survey (CHARLS). All have seeded enormous research outputs contributing to addressing the challenge of population ageing.

Equity

Question 15: Is there evidence the system encourages and supports older Australians who wish to remain in the workforce past retirement age?

The retirement income system has few specific incentives that encourage or support older Australians who wish to remain in the workforce. In some instances, there are disincentives.

Around 70% of retirees receive a part or full Age Pension in retirement. The terms of the Age Pension are therefore of crucial importance to most Australians and the rules have a significant impact on retiree behaviour. In line with many other countries, the qualifying age for this pension has been increasing. In 2010 the average age of retirement was around 63 but this is expected to increase as the age at which the Age Pension can commence increases to age 67 in 2023.

Given increasing life expectancies, particularly since the mid-1960s, working longer should help to obtain a better balance between the years of saving for retirement and consuming those assets. The fact that each retiree's consumption period can be short or long results in some retirees exhausting their savings, unless longevity protection products are used.

Chart 1 earlier shows the importance of supporting older Australians who are able to continue working. It demonstrates how the average number of years people spend in retirement has increased significantly in the past few decades and is expected to continue increasing. Longer lifespans lengthen the number of years that each member's superannuation income must last. To make retirement income last for longer, retirees need to do one or more of the following:

- Accumulate more superannuation,
- Work for longer (thus saving more and reducing the number of years in retirement),
- Access more efficient retirement products (as recommended by the Financial System Inquiry) and discussed further in the section below, "Pooling in Retirement".

Whilst there are rules that permit seniors to add money to their superannuation savings, it is worth noting that the effect of doing this is often neutral compared to saving outside of superannuation. The Senior Age Pensioner Tax Offset rules mean most retirees would not pay tax on their earnings on savings held outside of super[7].

Incentives to work longer

One incentive is provided via the Age Pension Work Bonus. This allows pensioners to earn some extra money from employment without it impacting their Age Pension. However, it is limited to earning an additional $300 per fortnight (which is not assessed under the Age Pension income test). The usual income test free threshold is $174 for a single or $308 for a couple.

[7] Under the SAPTO rules a retired couple can earn up to around $58,000 per annum without paying any income tax.

Recent increases in the Age Pension qualification age mean people are "encouraged" to defer their retirement until they qualify for the pension, or at least discouraged to retire before then. While the workforce participation rates have increased for over 65s (from 10.1% to 15.3% over the last ten years[8]), this is more likely to be a result of need rather than encouragement.

For those who choose to retire later, lifetime income stream products (such as annuities) will pay a higher annual rate of income. For example, indicative rates of income for a single male in good health with $200,000 in superannuation are:

Table 2: Indicative rate of income from a pooled retirement income product by age

Retirement Age	Indicative income from a pooled lifetime income product designed to target inflation increases over time[9]	Uplift for delaying retirement
60	$10,150 p.a.	-
65	$11,450 p.a.	13%
70	$13,250 p.a.	31%

Disincentives to work longer

If a person on the average full-time salary works beyond their Age Pension qualification age, they would receive no Age Pension income, even allowing for the Work Bonus rules above. Any Age Pension that they would have received if they didn't work is forfeited. There is no compensation for deferring receipt of the Age Pension in this way (the previous Pension Bonus Scheme that existed from 1998 was closed to new registrations from 1 July 2014).

The Superannuation pillar, via the taxation treatment, slightly discourages people from working beyond age 60. If a person continues to work and does not access their superannuation then the investment earnings on their superannuation balance continue to be taxed. However, if the person retires and commences an Account Based Pension after 60, then the pension income and the investment earnings are generally tax free.

It is noted that the Treasurer has suggested that older Australians may need to learn new skills in order to stay in the job market, but at the same time noting that 80% of Australians' training occurs before the age of 21.

The most significant disincentive to work is ill health and physical incapacity. There are cohorts (such as blue collar workers) who are more exposed to risks of ill health and will rely on access to the Age Pension.

[8] Australian Bureau of Statistics, Catalogue 6291.0

[9] Based on illustrative rates provided by Optimum Pensions / Hannover Re for a retiree from a representative sample of both blue and white collar employees.

Question 17: What are the implications of a maturing SG system for those who are not covered by compulsory superannuation?

The SG system as we know it is slowly maturing and will provide higher benefits for those who have been in the system for longer periods and working regular hours.

The table below demonstrates how different cohorts have been exposed to the SG system for differing periods of time (it should also be noted that those with fewer years in the system also had initially lower rates of SG contributions):

Table 3: How different age cohorts have been exposed to the SG system

Current age	Year in which they reach(ed) age 65	Years from when SG introduced (1992) till age 65
85	2000	8
80	2005	13
75	2010	18
70	2015	23
65	2020	28
60	2025	33
55	2030	38
50	2035	43

It is important to note that women have historically been exposed less to the SG than men due to periods of absence from the workforce due to child rearing and a greater propensity to work part time. In addition, should men take on more child rearing responsibilities then this will also impact their retirement outcomes.

On average, retirees who had fewer years in the SG system have lower levels of retirement savings and therefore will be more reliant on Social Security (i.e. taxpayers) for their retirement income and aged care costs.

As younger cohorts enter retirement, their higher superannuation balances mean they should be less dependent on the Age Pension. Over time, the Age Pension settings can potentially be adjusted to mould around these higher levels of private saving.

Going forward, universal coverage for all workers should be a goal of the SG system whether people are employees, self-employed or participate as part of the growing gig economy.

Without this coverage, the only fall back people will have where they have not made private provision, will be the Age Pension. This cost will be borne by all taxpayers, including those that saved through the SG and other voluntary savings.

History shows that voluntary saving decisions by households are generally inadequate. Only around 32% of workers[10] were covered by superannuation before the introduction of industry superannuation via the first of the 3% schemes in the 1980s (subsequently overtaken by the SG in 1992). And many of those who were covered were in fact compelled by their employer to join the superannuation fund. These tended to be Commonwealth and State employees or part of large corporates that made it a condition of employment. There were very low levels of completely voluntary participation.

Self-employed workers are not included in the SG system but may voluntarily contribute and obtain tax deductions for contributions. It is likely that new business owners choose to reinvest in their businesses rather than voluntarily direct cashflow to their superannuation. Given that a significant percentage of small businesses fail, many self-employed who plan to use the success of their business as their retirement plan may end up making no retirement savings whilst self-employed.

There are concessions that allow business that are being sold after 25 years and which have a value of less than $5m to contribute those proceeds to superannuation on a non-concessional basis. Given the reducing limits on non-concessional contributions over time, this system might be regarded as “too generous”.

The gig economy, which appears to be in full swing, creates a new set of problems with respect to the SG system. It provides people with different types of jobs than full-time positions. These may provide increased flexibility, etc. but may not always provide sufficient total income for their needs let alone any savings for retirement. This means that taxpayers will need to support the lower paid or gig workers who will fall back onto the Age Pension system to a greater degree than otherwise. This problem will be exacerbated by the falling ratio of workers to retirees.

Many of the gig economy jobs are casuals and even where they are full-time, many are contractors rather than employees (i.e. they are required to be self-employed). In the case of casuals, unless the monthly earnings reach the $450 threshold, no SG contributions are required. In some cases, people work several casual jobs, none of which will see any SG contributions being made despite their overall monthly income exceeding the $450 threshold. This means no long-term retirement savings are being made.

10. www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/pubs/BN/0910/ChronSuperannuation

As a growing part of the workforce, if the gig economy workers do not participate in the SG system, the percentage of the population covered by compulsory superannuation will reduce. It is not clear how large the gig economy will be, but its growth could mean that the success of this pillar of the retirement income system will not deliver to its full potential and place a greater burden on the Age Pension.

Cohesion

The Green Paper, *Options for an Improved and Integrated System of Retirement*, presents a number of options to improve cohesion between the different elements of the retirement incomes system, particularly the Age Pension.

Question 21: What should the Panel consider in assessing whether the retirement income system is cohesive?

We encourage the Panel to generally consider the individual's perspective when assessing whether the retirement incomes system is cohesive.

We agree with the broad outline set by the Panel to investigate:

- Incentives in the system,
- Interactions between the pillars,
- Interactions with other systems, and
- How individuals engage with the system.

We encourage the Panel to look at these elements both individually and concurrently. For example, the current means test is designed with a relatively high taper than has applied historically which should encourage individuals to draw down on their assets as income. Yet behavioural analysis shows the majority of retirees draw down at the minimum which can potentially create a negative outcome for the individual.

For a thorough perspective on retirement decision making (and cohesion) through the eyes of individual households see the paper '*Good Practice Principles for Retirement Phase Modelling*' presented at the Actuaries Financial Services Forum in 2016[11]. The charts on pages 13 and 17 showcase the challenges that Australian retirees face in achieving a cohesive overall retirement outcome in practice. The Actuaries Institute is working on turning this research into an Information Note.

In examining whether the system is cohesive, the Panel should keep in mind whether the system is also sufficiently flexible to allow for a variety of different circumstances and changes in circumstances. For example, does the system allow for retirees to access Aged Care or address health needs at short notice should their physical condition deteriorate rapidly? As individuals bear much of the risk in our superannuation system, it is important to consider how individuals are able to manage these risks and whether they have the flexibility and financial resources to address them.

11. https://www.actuaries.asn.au/Library/Events/FSF/2016/HenningtonLangtonRetirement.pdf

Question 22: Does the retirement income system effectively incentivise saving decisions by individuals and households across their lifetimes?

We encourage the Panel to examine the interaction of the 3 Pillars, in particular the ability of the Age Pension to influence the outcomes from voluntary savings for particular cohorts.

The Institute Green Paper, *Options for an Improved and Integrated System of Retirement,* draws on analysis within three Papers presented at the Actuaries Financial Services Forum in May 2018, namely:

- The Age Pension means test: contorting Australian retirement (Dr Anthony Asher & John De Ravin)

  https://www.actuaries.asn.au/Library/Events/FSF/2018/TheAgePensionMeansTestsPaper.pdf
- Retirement Incomes – Australia vs the Rest of the World (Dr David Knox)

  https://www.actuaries.asn.au/Library/Events/FSF/2018/DavidKnoxPaper.pdf
- The Age Pension in the 21st Century (MichaelRice)

  https://www.actuaries.asn.au/Library/Events/Insights/2018/MichaelRicePaper.pdf

Each of these papers explore issues with the means test and the impact on incentives to save assets.

Another area of interest is the interaction of the family home and the means test. These issues are discussed in detail in the Green Paper.

In the retirement phase, the dominant retirement product offered by superannuation funds for delivering retirement income is the account-based pension. With this product, each member has an individual account and simply draws money from it as their "retirement income". All risk and most decision making rests with the member. Studies of Centrelink data[12] from 1999 to 2007 show that the median pensioner spends cautiously and passes away with assessable wealth (mainly financial) equal to 90% of the assets recorded at first observation. In other words, many pensioners spend little of their capital, delivering a lifestyle that is less than their assets can potentially afford.

Question 24: What is the evidence that the outcomes the retirement income system delivers and its interactions with other areas (such as aged care) are well understood?

There is a large and growing body of literature which shows the interaction of the 3 Pillars, private savings and the tax system. However, there is a lack of research analysing the integration of the retirement incomes system with the Aged Care system and Commonwealth Rent Assistance. We note that CEPAR have undertaken some research into Aged Care, though there have been changes to the Aged Care system since the research was initially undertaken[13]. The lack of research in this area is also largely due to the lack of good quality data, as previously commented in our response to Question 12.

[12] Asher, A., Meyricke, R., Thorp, S., & Wu, S. (2017). Age pensioner decumulation: Responses to incentives, uncertainty and family need. Australian Journal of Management, 42(4), 583–607. https://doi.org/10.1177/0312896216682577.

[13] http://cepar.edu.au/sites/default/files/Aged_care_in_Australia_Part_I.pdf

In many respects, households entering retirement cannot plan for aged care as there are too many unpredictable factors involved, as well as a secondary means test applied on top of the Age Pension means test. This uncertainty may create a perceived need to always have access to a large lump sum should the need arise at all points throughout retirement. In particular:

1. You do not know whether you will need care
2. You do not know when you will need it or how long you will need it
    - The impact on retirement outcomes between needing care for the last year of life and needing residential care for many years since early in retirement are dramatically different
3. You do not know whether you can rely on informal care
    - You do not know if you will have a partner or where they will be living
    - You do not know where your significant family, friends and carers will be living
4. You do not know who will be able to provide professional care
    - Available places (in different locations and for different needs) depend on variable supply and demand
    - You may not be able to afford the cost, or prefer to opt for something better
5. You do not know what type of care you will need
    - Home or residential care?
    - Care for dementia or physical ailments?
6. You do not know what subsidies Government will offer when you need them
    - Government finances are not predictable
    - Government's views of subsidies are not predictable
    - Costs of different care are not predictable

There is also a great deal of complexity regarding how the superannuation system interacts with the Aged Care system. Without this understanding, it is difficult for individuals to plan for late retirement and the onset of frailty.

The uncertainty around the age care costs and complexity of the current system have important implications for retirement income. Some international studies have found that under-spending in retirement is also attributable to self-insuring against aged care costs.[14]

Question 26: Is there sufficient integration between the Age Pension and the superannuation system?

Please refer to the previously mentioned Green Paper, *Options for an Improved and Integrated System of Retirement*.

[14] Ameriks et al. (2015). Long-term-care utility and late-in-life saving. NBER working paper No. 20973. Available at: https://www.nber.org/papers/w20973

Pooling in retirement

This section seeks to provide additional evidence to the Panel on the potential benefits of pooling, a feature that is currently not utilised by the vast majority of retirees in the retirement incomes system (outside of the Age Pension). Generally, pooling will have implications for many of the areas of investigation by the Panel. For example,

- Adequacy: Pooling of longevity risk can mean that fewer benefits arising from the compulsory superannuation system "leak" in the form of death benefits to beneficiaries. This can allow an adequate income to be achieved with a lower overall rate of compulsory contribution.
- Equity: Pooling of risk results in a redistribution of assets from those who die early to those who live longer. Consideration of the equity of these arrangements is important so as not to disadvantage different cohorts (for example, a potential transfer of wealth from lower socio-economic groups).
- Sustainability: Pooling can spread longevity risk, reducing the risk burden on individuals and fall back mechanisms (the Age Pension), although pooling could also result in a faster drawdown of retirement incomes, increasing Government pension payments. Consequently, pooling will have an impact on the sustainability of the system.
- Cohesion: The design of other elements of the system has implications for the uptake of pooled products, for example:
    - On 1 July 2017, the law was changed to allow a wide variety of retirement pooling vehicles to be developed, over and above traditional annuities.
    - Aged Care often requires the payment of Refundable Accommodation Deposits, creating a desire for access to a large liquid lump sum.

Pooling longevity risk can result in 15% - 30% higher retirement income

Australia's Financial System Inquiry 2014 was charged with examining how the financial system can be positioned to best meet Australia's evolving needs and support Australia's economic growth. One of the five specific themes was Superannuation and Retirement Incomes. The Inquiry received over 6,800 submissions and held stakeholder meetings including with 50 financial institutions as well as market participants and regulators from the United States, European Union, United Kingdom, Asia and New Zealand.

The Actuaries Institute supports key factual observations made in the Inquiry's Final Report including[15]:

- *At retirement, superannuation assets are not being efficiently converted into retirement incomes. This contributes to a significantly lower standard of living for some Australians in retirement and during their working life*
- *Economic growth will benefit if the growing number of retirees are able to sustain higher levels of consumption*

[15] FSI Final Report page 25 & 90

- *Tax concessions in the superannuation system are not well targeted at improving retirement incomes, which has a number of consequences*
- *Superannuation assets are not being efficiently converted into retirement income due to a lack of risk pooling and over-reliance on individual account-based pensions*

The Actuaries Institute supports the conclusions from the modelling done for the Inquiry: that retirement incomes have the potential to increase by around 15 to 30 per cent by combining an account-based pension with products that insure (i.e. pool) longevity risk[16]. "Longevity risk" refers to the uncertainty each retiree faces about how long they will live. We note that pooling may come at some additional cost in terms of reduced flexibility, reduced withdrawal benefits and/or death benefits, additional costs to administer the pool and potentially distribution costs for the product.

This uplift in income comes from paying lower death benefits in retirement (other than to the member's spouse) and a partial reduction in flexibility i.e. it ensures superannuation is better channeled towards retirement income.

Pooling/insuring of longevity risk gives retirees confidence to consume - as they know that at least a portion of their income will last for life. It reduces the need to hold back assets 'just in case' retirees live longer than expected.

It should be noted that the Age Pension is already a pooled lifetime income stream (targeted through means testing). This may reduce the need for longevity protection for some retiree segments.

Unintended consequences from individual accounts for retirement

The prevailing product offered by superannuation funds for retirement income is the account-based pension (ABP). With an ABP each member has an individual account and simply draws money from it as their 'retirement income'. The level of withdrawals is subject to a minimum amount which is an age based percentage of their balance at the start of each year. If you live too long and/or experience poor returns, then your income will fall. If you draw more than the minimum, then there is a risk your balance will run out.

Studies of retiree behaviour based on Centrelink data[17] show that the median pensioner spends little of their assessable wealth (mainly financial) in retirement. The vast majority of their balances get paid as death benefits when they pass away. The reasons for this are likely to be:

(1) A fear that reducing their balance could leave them short in later life. A particular problem is that people don't know when they will die. A natural response to this uncertainty is to err on the side of caution and maintain a reserve i.e. millions of individuals are self-insuring their own longevity risk.

(2) A desire to leave money to children. This, presumably, is contrary to the objective of our tax-incentivised superannuation system.

16 Modelling done by the Australian Government Actuary for the FSI. See FSI final report page 26. https://treasury.gov.au/sites/default/files/2019-03/p2014-FSI-01Final-Report.pdf

17 Asher, A., Meyricke, R., Thorp, S., & Wu, S. (2017). Age pensioner decumulation: Responses to incentives, uncertainty and family need. Australian Journal of Management, 42(4), 583–607. https://doi.org/10.1177/0312896216682577.

(3) A need to have money set aside for large expenditures, particularly possible health care or Aged Care costs which are likely to arise in retirement.

The total paid out as death benefits instead of retirement income is estimated to be around one quarter to one third of the total starting balance of retirees. This 'leakage' causes an inefficiency problem for our superannuation system.

Retirees can potentially achieve a higher standard of living if their *entire* superannuation balance is used to provide retirement income. This, and the need for greater use of pooled products that achieve this, was one of the key findings and recommendations of the FSI.

A way to explain the problem of not pooling longevity risk is by way of a (simplified) example:

- Consider 100 females who all retire at the same time at age 65. They all want a superannuation income of $10,000 per annum and to feel approximately 95% certain that their savings can last as long as they live.
- For simplicity of the example, we assume they are all cautious investors and we assume a 0% real return net of fees. (We ignore investment risk.)
- Using Australian Life Tables 2015-17 (including the 25-year improvement factors) the expected number of them living to key ages is as follows:

Table 4: 100 females age 65 - Expected number still alive at key ages

Age	Expected number still alive at that age
65	100
80	86
85	75
90	55
95	26
100	6
105	0

- The above table shows that each female faces a 6% chance they will live until age 100. Therefore, for each person to be 94% confident their income can last for life, each person must ensure their income can last to age 100.

Using individual accounts

- If they work individually, then each person must hold back some savings as a reserve that can last to age 100, in order to achieve the desired level of confidence. It requires them to each have more retirement savings when they enter retirement.

- Assuming a 0% real return, **each person needs $350,000 in savings** at age 65 to achieve a real income of $10,000 per annum that's 94% certain to last them for life.
- In total that is **$35,000,000 for all 100 females**.

Working together as a pool

- If they instead work together and form an agreement to pool their resources (i.e. a simplified Group Self Annuitisation arrangement), the pool can provide confidence that each person's money will last for life but, referring to the above table, only has to budget for 26 people living to age 95 and 6 people living to age 100[18] etc. The rest of the money can be paid out as annual incomes each year. (Note: for simplicity of the example, we assume that they die exactly in line with the life tables).
- Assuming a 0% real return, **the pool only needs $24,930,000** in total to provide all 100 females with a real income of $10,000 per annum that will last for life**.**
- This means **each female only needs $249,300 not $350,000 in retirement savings** to achieve the same income with the same confidence.

In this example, pooling has the same effect as each person saving an additional 40% in retirement savings. The downside is that when they invest, they are fully committing their savings towards their need for lifetime income. They cannot withdraw their money voluntarily (they give up liquidity) from the pool and nothing will be payable on death. In practice, there will also be administrative and/or distribution costs deducted from the pool.

Obviously, this is a simplified example in order to demonstrate the concept of pooling. Actual pooling arrangements need to also take investment risk into account and allow for basis risk (i.e. the chance that actual lifespans are longer or shorter than estimated from life tables).

Ways to pool longevity risk

Since 1 July 2017, Australia has made it easier for providers to offer the following retirement income product types for pooling longevity risk:

- Immediate lifetime annuities,
- Deferred lifetime annuities - where payments commence at a future age. The rate of income is higher than an immediate annuity to compensate for deferring,
- Investment-linked annuities - where longevity risk is insured but the investment risk is passed on to retirees in the form of higher/lower income each year.

There are a number of ways for superannuation funds to offer these type longevity products to their members. These include:

- Offering their members traditional annuities from an insurance company,
- Creating their own pool and working with a specialist life insurer to take on the longevity risk, or

[18] This is a simplified example. In reality pools still carry some uncertainty about whether their members will die in line with the mortality assumptions. However, pools can insure this risk with an insurer.

- Creating their own pool to share longevity risk (this requires a very large number of retirees to provide smooth outcomes).

By combining products, it's possible to balance a retirees' competing needs for high income, capital access, longevity protection and leaving a bequest. For example, combining an account-based pension with an investment-linked deferred annuity, provides some access to capital, exposure to growth assets and longevity insurance. Given that retirement often lasts for two or three decades, exposure to growth assets can be important. This is because conservatively invested assets may struggle to sustain consumption that keeps pace with inflation. Counterintuitively, a balanced portfolio can result in lower overall retirement risk than a conservative portfolio[19].

Development of retirement solutions that provide income for life

Since the introduction of the Superannuation Guarantee system in 1992, the superannuation industry has been focussed on the accumulation of lump sums. This is characterised by funds being constantly measured by net investment performance. Peer relative performance, instead of member outcomes, has been the focus.

This has led to a paradigm where superannuation is framed in terms of each member's individual balance rather than in terms of the annual retirement income they can achieve.

Although investment returns and member outcomes are correlated, they are not identical. Poor member outcomes can still arise as a result of bad decisions on how to utilise the retirement savings members have accumulated. For example, many members could have achieved a better standard of living if they did not choose to self-insure against longevity risk.

Whilst there has been a reduction in the amount of retirement benefits taken out of the system as a lump sum, the uptake in retirement solutions that provide an income for life has not been great. This will in part have been due to the complexity of these products, which consumers did not understand, trying to deal with the restrictive legislation that applied before 1 July 2017 which required large solvency reserves.

As of 30 June 2018, annuities only account for 6.0% of total pension account numbers and only 3.0% of total pension assets. In contrast, 82% of pension assets are in account-based pension or allocated pension.[20] These failure experiences have led to financial loss and legacy product issues for the provider, which has reduced the incentives of funds and institutions in investing in the development of retirement income products.

[19] The Australian Government Actuary designed an approach to measure multiple retirement risks into a single metric. This was part of last year's Retirement Income Disclosure Consultation, https://treasury.gov.au/consultation/c2018-t347107_page 10.

[20] Annual Superannuation Bulletin June 2018, APRA. The remaining 15% of pension assets are categorised as 'other'.

Research by the government's Behavioural Economics Team (BETA)[21] found that presenting key information in a relatively simple manner helped people to make retirement product decisions and made 52% of people likely to choose the Comprehensive Income Product for Retirement (CIPR). Clearly education of members, financial planners and other superannuation professionals is required if viable lifetime income products are to be purchased.

There has been some progress made in the development of retirement income products after the Treasury's Retirement Income Covenant Position Paper in 2018 and the change of the means test rule from 1 July 2019. A survey taken by Investment Innovation Institute [i3] in October 2019 indicates that a small minority of superannuation funds have developed or are developing a retirement product (CIPR) offering.

Conclusion

We trust this submission is of assistance to the Panel. We would welcome the opportunity to meet with you if you would like to discuss any of our recommendations. Please contact the Actuaries Institute CEO, Elayne Grace, elayne.grace@actuaries.asn.au if you have any questions regarding our submission.

Yours sincerely

Hoa Bui
President

[21] https://behavioraleconomics.pmc.gov.au/sites/default/files/projects/supporting-retirees-in-retirement-income-planning.pdf

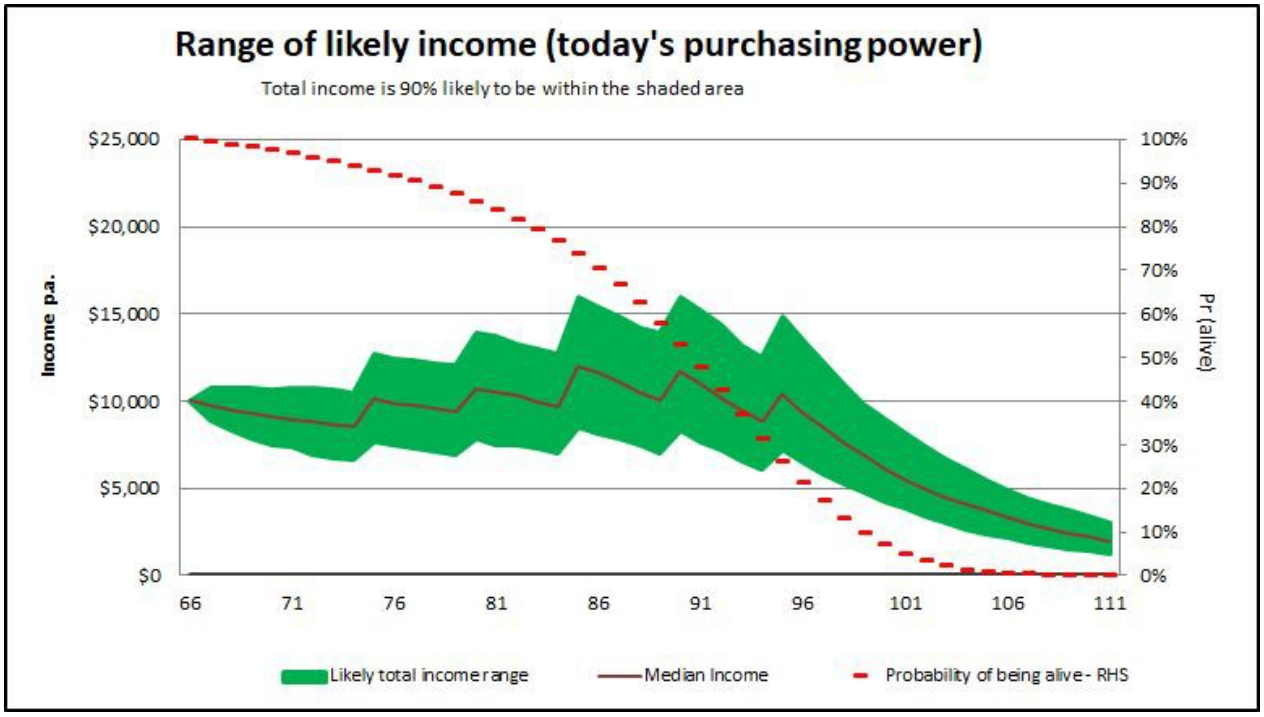
Appendix - Projected income from pooling

An inflation-linked lifetime annuity provides a guaranteed annual retirement income for life that will keep pace with inflation. Other retirement products carry an element of uncertainty to the income they will provide in today's dollars (price adjusted).

The following charts show the range of projected income for a 66-year old female in good health with $200,000 in a balanced superannuation option. These charts show the results of 1,000 stochastic projections of investment returns and inflation (CPI) over the next 50 years and assume the asset allocation of the account-based pension and investment-linked annuity is 'balanced' (with 70% allocation to growth assets). The charts do not include the impact of the Age Pension, which for some segments of retirees moderates the risk outcomes and reduces the differences in products, nor do they show any subsequent loss of benefits paid on death. As such, these charts should be taken as indicative illustrations of pooled vs. unpooled product outcomes only.

To aid comparison, Table 5 later in this Appendix shows the cumulative income from each product at each age as well as the death benefit and withdrawal benefit that would be payable at each age.

Chart 3: Projected income from an account-based pension

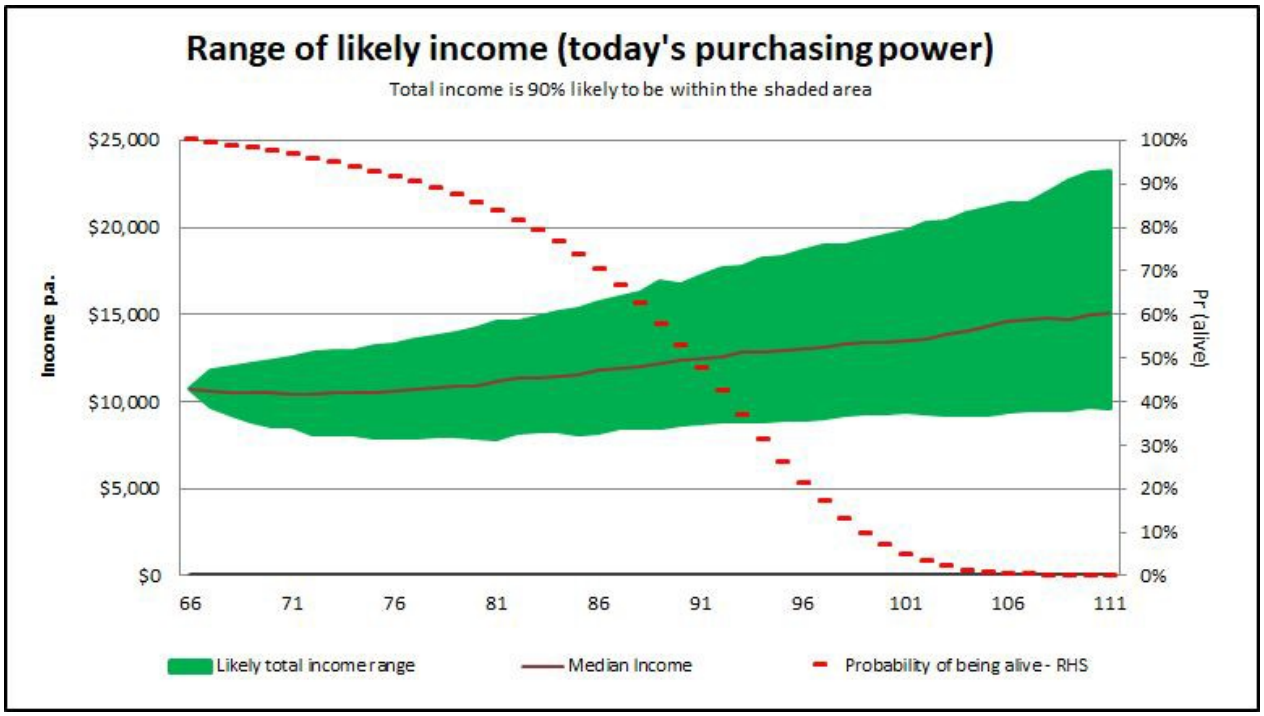


Source: Modelling by Optimum Pensions

- The green shading above indicates where her income is projected to be with 90% confidence (in today's dollars, price adjusted). There is a 90% chance that her income will be somewhere within the green shaded area each year.

- The investment and CPI simulations[22] are for a typical balanced investment option. An allowance of 0.5% for administration and 0.6% for investment management fees has been made.
- There is a 5% chance her income will rise above the top of the green shaded area and a 5% chance her income will be below the bottom of the green shading.
- She is assumed to select the standard minimum income level. The minimum is an age-based percentage of her projected balance each year, starting at 5% and increasing at ages 75, 80, 85, 90 until it reaches 14% at age 95. This explains why the green shading steps upward at those ages.
- The median income falls in real terms between ages 66 and 75 then steps up each time the minimum percentage increases. From age 95 it starts to fall dramatically.
- On death, any balance remaining in her account is paid as an unintended death benefit to her children or, if no children, to her estate. See Table 5.1 below.
- The red dashed line shows the probability of being alive at each age based on ALT2015-17 with the 25 year improvement factors.

Chart 4: Projected income from a pooled longevity product (investment-linked)



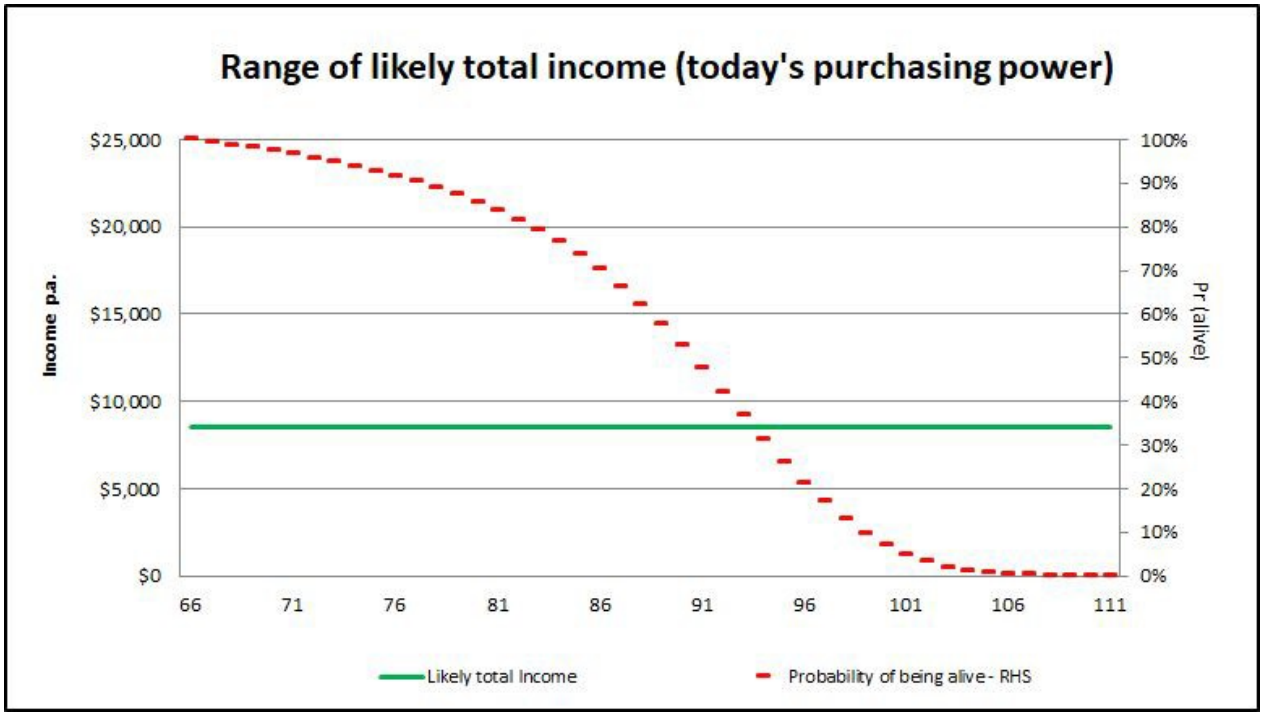
Source: Modelling by Optimum Pensions

- The green shading above indicates where her income is projected to be with 90% confidence (in today's dollars, price adjusted). There is a 90% chance that her income will be somewhere within the green shaded area each year.

[22] Investment simulations were provided by consulting actuaries 10E24 Pty Ltd

- There is a 5% chance her income will rise above the top of the green shaded area and a 5% chance her income will be below the bottom of the green shading.
- The projection is based on an investment-linked product design. The mortality basis used was selected for Australia by a major global reinsurer of longevity risk.
- The median falls very slightly for the first 5 years (due to current market conditions) then steadily increases for life thereafter.
- On death during the first 15 years, a lump sum is paid such that she would receive a minimum of 15 years of income. See Table 5.1 for an estimate of the death benefit payable at each age.
- The simulations[22] relate to the same underlying balanced portfolio as the ABP above and make an allowance of 0.5% for administration, 0.5% for longevity insurance and 0.6% for investment fees.

Chart 5: Projected income from a traditional annuity from a life insurer



- If she moved her $200,000 into an inflation-linked lifetime annuity then an indication of the income she could receive is $8,500 per annum for life[23].
- This would be steady (in today's dollars) for life.
- See Table 5.1 for an estimate of the death benefit (in today's dollars) payable at each age and Table 5.2 for the amount she could withdraw at each age. Death benefits are lower for the annuity examples as these will fund the longevity benefits for other people.

[23] Estimated based on Challenger's annuity rates
www.challenger.com.au/personal/products/payment-rates/lifetime-annuity-payment-rates

Table 5: Comparison tables - Account-based versus Pooling

Note: Retirees can combine products to align member outcomes with their personal objectives and preferences.

Table 5.1	DEATH BENEFIT COMPARISON (today's dollars) (Lower is 5th percentile, higher is 95th percentile. The yellow row, age 90, is her median lifespan)								
Age	**Account based pension**			**Investment-linked annuity example**			**Inflation-linked annuity example**		
	Lower	Median	Higher	Lower	Median	Higher	Lower	Median	Higher
66	200,000	200,000	200,000	161,040	161,040	161,040	200,000	200,000	200,000
67	177,618	194,510	215,522	135,638	148,612	164,758	191,698	195,695	199,243
68	166,688	189,779	214,256	120,122	136,899	154,971	181,825	191,214	200,489
69	157,762	185,841	214,927	106,682	125,824	145,860	171,873	186,549	201,796
70	150,421	182,449	213,529	94,941	115,262	135,085	161,201	182,459	202,494
71	146,990	178,573	214,480	85,770	104,347	125,204	152,099	179,129	203,614
72	138,405	176,007	214,599	73,627	94,037	114,781	144,822	175,016	204,684
73	135,355	173,712	212,443	65,220	83,931	102,935	136,994	170,769	204,295
74	132,223	171,233	210,177	56,652	73,556	90,412	131,831	167,149	204,309
75	127,468	169,186	211,014	47,588	63,244	79,058	126,187	163,593	204,162
76	125,077	164,951	206,794	39,878	52,901	66,471	121,721	159,988	202,464
77	121,795	162,725	205,169	31,866	42,904	54,001	55,301	74,491	96,197
78	119,175	159,111	202,953	24,102	32,337	41,157	47,400	65,448	87,144
79	115,993	156,128	200,676	16,145	21,735	27,849	40,590	56,730	76,422
80	112,348	152,744	198,924	7,963	10,901	14,190	33,355	48,409	67,652
81	106,486	149,835	195,362	0	0	0	27,596	40,318	57,923
82	107,385	146,886	189,760	0	0	0	22,374	32,761	47,571
83	104,163	142,348	184,997	0	0	0	17,249	25,711	37,611
84	100,234	137,950	181,964	0	0	0	12,516	18,762	27,712
85	94,588	133,781	177,621	0	0	0	8,090	12,199	18,011
86	90,385	129,258	171,073	0	0	0	3,895	5,951	8,934
87	87,556	122,698	164,786	0	0	0	-	-	-
88	83,004	116,565	157,566	0	0	0	-	-	-
89	77,805	111,387	154,338	0	0	0	-	-	-
90	75,906	106,525	145,454	0	0	0	-	-	-
91	70,166	99,897	138,323	0	0	0	-	-	-
92	65,164	92,519	130,537	0	0	0	-	-	-
93	59,984	86,385	119,848	0	0	0	-	-	-
94	55,519	80,090	113,492	0	0	0	-	-	-

95	51,334	74,460	106,114	0	0	0	-	-	-
96	46,117	66,466	96,286	0	0	0	-	-	-
97	41,539	60,279	87,074	0	0	0	-	-	-
98	37,550	54,454	77,800	0	0	0	-	-	-
99	34,297	48,988	70,363	0	0	0	-	-	-
100	30,297	43,795	63,855	0	0	0	-	-	-

Table 5.2

MAX. WITHDRAWAL BENEFIT COMPARISON (in today's dollars)

(Lower is 5th percentile, higher is 95th percentile.
The yellow row, age 90, is her median lifespan)

Age	Account based pension			Investment-linked annuity example			Inflation-linked annuity example		
	Lower	Median	Higher	Lower	Median	Higher	Lower	Median	Higher
66	200,000	200,000	200,000	-	-	-	200,000	200,000	200,000
67	177,618	194,510	215,522	-	-	-	182,570	186,376	189,755
68	166,688	189,779	214,256	-	-	-	164,508	173,003	181,394
69	157,762	185,841	214,927	-	-	-	147,319	159,898	172,968
70	150,421	182,449	213,529	-	-	-	130,496	147,704	163,923
71	146,990	178,573	214,480	-	-	-	115,884	136,478	155,133
72	138,405	176,007	214,599	-	-	-	103,444	125,011	146,203
73	135,355	173,712	212,443	-	-	-	91,329	113,846	136,196
74	132,223	171,233	210,177	-	-	-	81,609	103,473	126,477
75	127,468	169,186	211,014	-	-	-	72,106	93,481	116,664
76	125,077	164,951	206,794	-	-	-	63,758	83,802	106,052
77	121,795	162,725	205,169	-	-	-	55,301	74,491	96,197
78	119,175	159,111	202,953	-	-	-	47,400	65,448	87,144
79	115,993	156,128	200,676	-	-	-	40,590	56,730	76,422
80	112,348	152,744	198,924	-	-	-	33,355	48,409	67,652
81	106,486	149,835	195,362	-	-	-	27,596	40,318	57,923
82	107,385	146,886	189,760	-	-	-	22,374	32,761	47,571
83	104,163	142,348	184,997	-	-	-	17,249	25,711	37,611
84	100,234	137,950	181,964	-	-	-	12,516	18,762	27,712
85	94,588	133,781	177,621	-	-	-	8,090	12,199	18,011
86	90,385	129,258	171,073	-	-	-	3,895	5,951	8,934
87	87,556	122,698	164,786	-	-	-	-	-	-
88	83,004	116,565	157,566	-	-	-	-	-	-
89	77,805	111,387	154,338	-	-	-	-	-	-
90	75,906	106,525	145,454	-	-	-	-	-	-

91	70,166	99,897	138,323	-	-	-	-	-	-
92	65,164	92,519	130,537	-	-	-	-	-	-
93	59,984	86,385	119,848	-	-	-	-	-	-
94	55,519	80,090	113,492	-	-	-	-	-	-
95	51,334	74,460	106,114	-	-	-	-	-	-
96	46,117	66,466	96,286	-	-	-	-	-	-
97	41,539	60,279	87,074	-	-	-	-	-	-
98	37,550	54,454	77,800	-	-	-	-	-	-
99	34,297	48,988	70,363	-	-	-	-	-	-
100	30,297	43,795	63,855	-	-	-	-	-	-

Source: Optimum Pensions