


Retirement explainer series

Lifetime income streams

Edition 9

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<p>Technical rating</p> <p>Boffin</p> <p>Industry professional</p> <p>Novice</p> 	<p>Brief synopsis: The nature, types and features of lifetime income streams (LIS) are detailed. LIS may be viewed as a hybrid instrument where income for life is supported by both investments and ‘mortality credits’, with the latter secured in exchange for access to capital. Key LIS features include: insured versus pooled, the type of income stream (fixed nominal, fixed real or investment-linked), income commencement (immediate or deferred); and variation in access to capital. Including LIS in a retirement solution helps to sustain income for life, which can also provide confidence to retirees that they are not going to run out of money. Products available in Australia and potential reasons for low take-up by retirees are discussed.</p> <p>Questions addressed:</p> <ol style="list-style-type: none"> 1. What are LIS and their nature? 2. What are the types of LIS and their features? 3. How might LIS be used within retirement solutions? 4. What lifetime income products are currently available in Australia? 5. Why has the take up of LIS been so low, and what might be done about it? <p>Key terms: Retirement income; lifetime income streams (products / annuities); mortality credits; product features; retirement solutions; annuity puzzle</p> <p>Who should be interested? Retirement specialists, retirement leads, retirement modellers (e.g. actuaries), product designers, financial advisers, regulators, people wanting a career in the retirement income space.</p>
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Introduction

This explainer explores lifetime income streams¹ (LIS), also known as lifetime income products or lifetime annuities². LIS are one of three main potential components of retirement solutions alongside investments (see [Explainer #8](#)) and a drawdown strategy (see [Explainer #5](#)).

This explainer is our most lengthy and technical yet, but also one of the most pertinent. Understanding of

LIS seems to be patchy and sometimes limited within the super industry. We trust that this piece may assist the industry to upskill on the topic.

We describe LIS as a hybrid instrument that generates income for life from a combination of underlying investments and access to ‘mortality credits’, which provide the longevity protection. We outline types of LIS and product features. We discuss the potential use of LIS in retirement solutions, and overview some of the LIS products currently

¹ We prefer the term ‘streams’ rather than ‘products’ as it better captures group pooling, which is an arrangement between members rather than a product that is purchased.

² At times we use the term annuity in place of LIS for convenience, although technically annuities can only be issued by life insurance companies.

available in the Australian market³. We also investigate theories for the low take-up of LIS (the so-called ‘annuity puzzle’), and what might address the reluctance of those retirees who may benefit from including a LIS in the mix.

A hybrid instrument

LIS can be conceptualised as a hybrid instrument that generates income for life sourced from two underlying components:

- **Investments** – The capital committed is invested and underpins the generation of income. Fixed income investments can be used to support fixed income streams that are fixed in nominal or real terms. Alternatively, investing the capital in assets offering higher but variable expected returns supports higher but variable income. This occurs in the case of investment-linked lifetime annuities (ILLAs), also known as market-linked annuities.
- **Mortality credits** – The second component is what actuaries call ‘mortality credits’, which arise in exchange for contributing capital. Mortality credits are more often generated under an arrangement whereby the residual capital of those who die (after any death benefits) are used to support ongoing income generation for those who survive, thus providing income for life and hence longevity protection. For this arrangement to work, the LIS purchaser needs to be willing to contribute capital into the pool upon death to support paying ongoing income to survivors, which necessitates sacrificing some access to capital. Another, less common possibility is contributing capital prior to death through paying insurance premiums. Mortality credits can also be

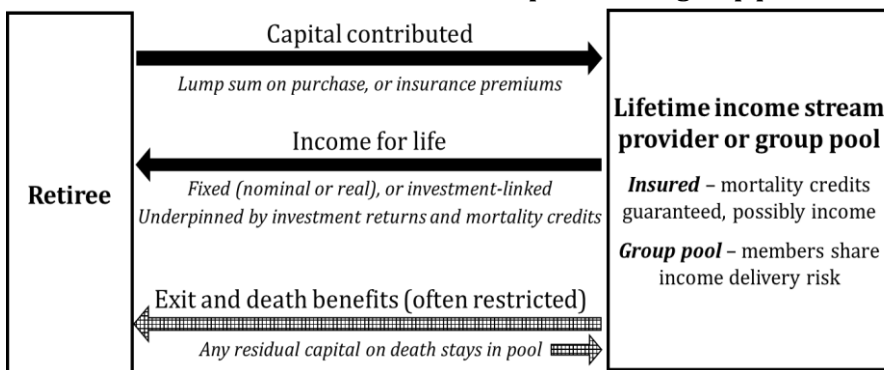
viewed as an *additional source of returns* available upon survival.

The figures below illustrate how LIS work. The diagram on the left shows the flows between the retiree (LIS participant) and either the LIS provider or a group pooling arrangement (to be explained below). The retiree contributes capital in the form of a lump sum payment on purchase (or insurance premiums) and receives income for life in return. The retiree may also have access to capital, typically in the form of exit or death benefits, although this is restricted as will be described below. Any residual capital not paid out on death remains within the pool to fund mortality credits.

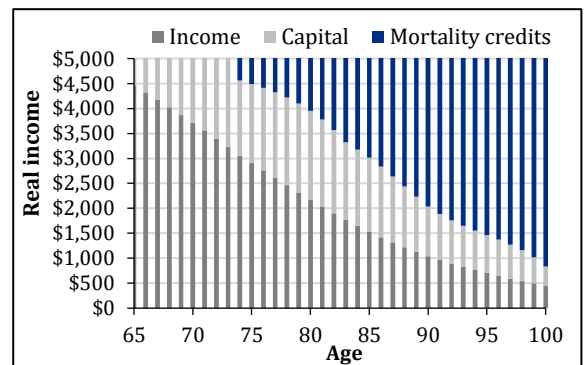
The chart on the right illustrates the sources of income for a ‘fixed real LIS’ (real lifetime annuity) providing inflation-protected real income of \$5,000 p.a. It describes how income is supported by income earned and drawdowns from the capital invested and accrual of mortality credits, with mortality credits eventually becoming the major source of income at older ages. Of course, the mortality credits are available only if the retiree survives.

The figures over illustrate how access to mortality credits impacts on potential income in the context of an ILLA. The example is built around an individual who invests \$100,000 at retirement, and is designed so that mortality credits are the only source of value difference between two alternatives⁴. The top chart shows the income percentiles under investment in a 60/40 balanced fund using an ‘affordable’ drawdown strategy as outlined in [Explainer #5](#). The lower chart shows income percentiles where 50% is placed in the balanced fund and 50% in an ILLA⁵ invested in the same 60/40 balanced fund while applying an equivalent drawdown strategy.

Flows between a retiree and the LIS provider or group pool



Income sources for a fixed real LIS



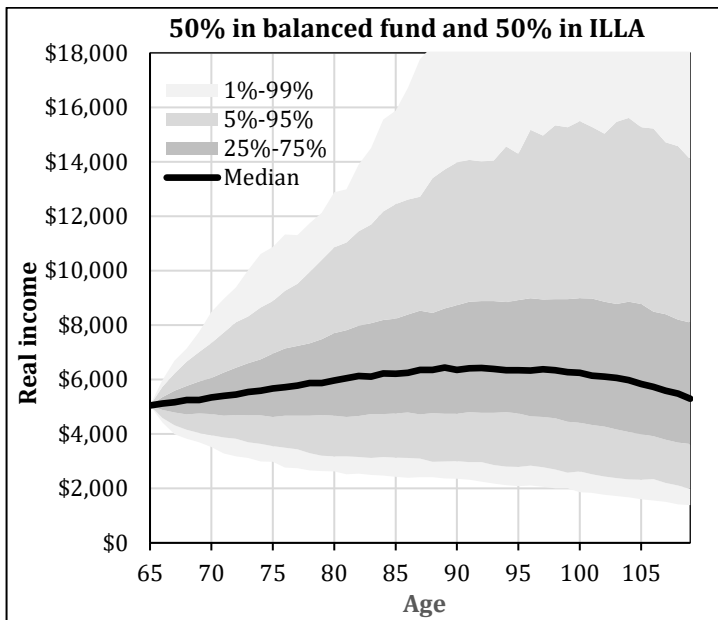
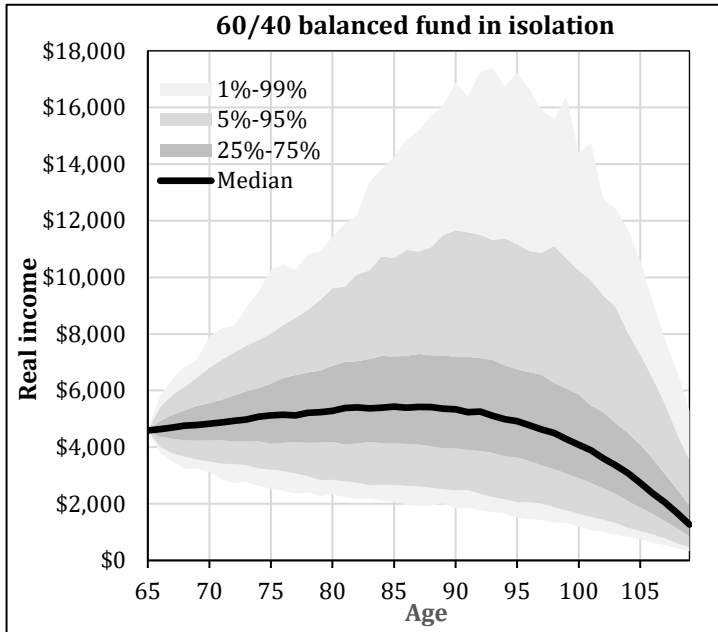
Source: Challenger

³ We thank providers who reviewed this explainer including the product descriptions for their engagement.

⁴ Income arising from the balanced fund and LIS are characterised in isolation thus excluding other income sources, most notably interactions with the Age Pension.

⁵ We allow for a notional 10% ‘loading’ in the ILLA to cover costs and profit margin for the provider. The ILLA is ‘pure’ with complete sacrifice of capital without any access via exit or death benefits.

Income percentiles with access to mortality credits



Allocating 50% to the ILLA raises the expected level of income starting from year one, delivering expected real income (weighted for survival) of \$6,101 versus \$5,364 for the balanced fund in isolation. This reflects the fact that the mortality credits operate as an additional source of ‘returns’, which permits more income to be drawn. Income is boosted in particular later in retirement as mortality credits accrue with age (see chart on page 2). By contrast, income tapers off at older ages when the balanced fund is used in isolation. In sum, adding in mortality credits improves both expected income and sustainability of income, thus better meeting the

two income objectives under the retirement income covenant (see [Explainer #1](#)). These income benefits come in exchange for contributing capital.

It is worth bearing in mind that investment risk tends to exceed longevity risk in terms of potential impact on expected income. This is most evident for ILLAs, with investment risk being the source of the variation in income seen in the charts. Even LIS that pay a fixed income stream carry a type of investment risk to the extent that the income they deliver will reflect interest rates at time of purchase.

Insured versus group pooling⁶

LIS may either be insured or based around pooling of members who collectively bear the risk, also known as ‘group self-annuitisation’, ‘collective defined contribution schemes’ or perhaps ‘modern tontines’. While the same underlying mechanisms apply, there are some notable differences.

Insured

Under an insured LIS, an insurance company guarantees the mortality credits of the pool and hence underwrites the longevity risk. When guaranteed income is provided (as opposed to an ILLA), the insurance company also underwrites investment risk, and perhaps inflation risk if the income is guaranteed in real terms. In some instances, the insurance company collects and invests the capital and undertakes to deliver income for life as contracted. In other instances, the insurance company underwrites longevity risk for a LIS provider (e.g. super fund), which invests the capital and delivers the contracted income stream.

An important distinction is between idiosyncratic (i.e. individual) longevity uncertainty and systematic or population longevity uncertainty. The idiosyncratic component relates to how long an individual lives relative to their life expectancy, and can typically be diversified away by the insurer with a modest sized pool (perhaps a few thousand participants). The systematic component relates to the possibility that the overall pool of participants may live longer (or shorter) than expected. The systematic component cannot be diversified, and the risk⁷ must be borne by the insurer (or reinsured). A related issue is ‘selection’ risk, which is the propensity for those expecting to live longer being more likely to participate in a LIS. The insurer

⁶ For further discussion of this issue, see an April 2023 article in FS Super by Jim Hennington and David Orford titled [Insured versus Uninsured Retirement Products](#).

⁷ The overall pool living longer creates difficulty for the insurer (profitably) meeting the income commitments.

needs to manage and build these risks into pricing, which adds to the cost of insured LIS.

Insured LIS will entail a cost of provision including operating expenses and a return on capital for the insurer, and is sometimes referred to as an insurer's 'loading'. Insurers are required to allocate capital⁸ to cover exposures such as longevity risk and any income guarantees. The latter apply in particular to LIS paying a fixed income stream where income is imperfectly hedged through the investments. For ILLAs, the annuity purchaser bears much of the risk through accepting a variable income stream; but the insurer still bears the longevity risk. The cost of provision may be passed through to LIS purchasers in a variety of forms (see 'fee' discussion below), including manifesting as a reduced income rate.

One potential issue with insured LIS is that reliance is placed on the insurance company being around to meet its obligations, which can extend over multiple decades. The risk of bankruptcy and default by the insurance company is thus an additional consideration. However, this risk is partly mitigated by the capital requirements imposed on life companies and regulatory supervision by APRA.

Group pooling

This approach entails (say) a super fund forming a pool from members that participate in the LIS, with income paid from the capital in the pool. The key difference to an insured LIS is that the members of the pool share all costs and exposures to elements such as systematic longevity risk and mismatches between income commitments and the underlying investments. Miscalculation can give rise to member equity issues. For example, if too much income is paid out initially and there is insufficient funding (e.g. mortality credits) to meet the 'commitments' made to the members who survive, the income that the pool can support is ultimately reduced resulting in an intergenerational transfer between survivors and those who enjoyed the income and then died.

Group pooling has potential to generate higher income for members than insured LIS due to the absence of insurer's capital, although the difference will also depend on other costs and a pooled LIS need not be cheaper to provide if it lacks scale. As an indication, if we set the loading at 0% rather than the 10% notionally assumed in the above example,

expected income increases by 6% for the 50/50 balanced fund/ILLA strategy. However, this calculation fails to allow for costs directly incurred by the member pool instead of the insurer, thus the income gain is likely to be something less than 6%.

Member pooling requires committing significant resources to deliver the LIS, including a capability to manage the member pool and allocate income and mortality credits across participants. For most super funds this would be a major venture. It also brings some risk related to ensuring member equity and potential legacy products if take-up is poor.

Product features

We now discuss the key features of LIS. We start by outlining some dimensions along which LIS may differ, before highlighting other design features.

Type of income streams: Fixed nominal, fixed real, or investment-linked

We have already highlighted that LIS can deliver an income stream that is fixed in nominal terms, fixed in real terms (i.e. adjusted for inflation) or investment-linked. We make a few observations, focusing on nominal versus real income.

The concern for retirees should be the real spending that the income stream supports. For fixed LIS, a real income stream may be preferred, noting that fixed LIS are typically purchased to manage income risk. Meanwhile, nominal LIS present risky real income streams as they are exposed to inflation. An ILLA may provide inflation protection to the extent that the underlying investments keep up with inflation. The issue is inflation-hedged assets can be hard to find and may entail sacrificing expected return and thus income (discussed in [Explainer #8](#)).

One reason⁹ why a retiree might be more willing to accept a nominal fixed LIS over a real fixed LIS is that they could view nominal LIS as delivering higher initial income 'yields'. At the date of writing, Challenger quoted¹⁰ annual payments of \$6,768 per \$100,000 for a nominal life annuity versus \$4,869 on a life annuity with full inflation protection for an age 65 female. Some retirees might interpret this as an income 'yield' of 6.8% versus 4.9%, ignoring that the real annuity payments grow over time¹¹.

⁸ Capital requirements for insurers is a highly technical area. We do not delve into this matter given our aim of providing a high-level overview of the key concepts.

⁹ Another reason might be a declining real income stream could accord with the observed tendency for retirees to reduce spending with age. The validity of this view depends on the extent that inflation erodes the spending

power of income in line with the desire to decrease spending. There is ample room for slippage here.

¹⁰ Rates accessed on 11 July 2024 at:

<https://www.challenger.com.au/personal/products/lifetime-annuities/lifetime-annuity-payment-rates>.

¹¹ It is also incorrect to interpret income payments from an LIS as a form of investment yield.

When income commences: *Immediate vs. deferred LIS*

The income delivered by a LIS may either commence immediately or at a given age. We call the former life annuities (LA) and the latter deferred life annuities (DLA). LAs provide an underpinning of guaranteed income throughout life. DLAs help with longevity protection through insuring against running out of money at older ages. A smaller amount of capital needs to be committed to purchasing a given income stream under a DLA, given that the income stream commences later and the greater probability that it may not be experienced due to higher mortality rates at older ages. For example, Challenger quotes¹² annual payments of \$18,420 for a real DLA commencing at age 85 per \$100,000 versus \$4,869 for immediate real LA for an age 65 female. It is thus possible to secure longevity protection through a more modest capital commitment with a DLA. For example, the above quote suggests that a female retiree with \$500,000 could purchase \$9,210 of real income from age 85 by allocating just 10% of their capital.

Another potential strategy is to defer the decision to purchase a LIS. This offers a number of advantages, including allowing capital to be accumulated, maintaining flexibility and ability to access a larger income stream per dollar of capital committed upon the eventual purchase. Referring again to the Challenger pricing, a female can receive real income of \$6,476 per \$100,000 by purchasing an immediate real LA at age 75, versus \$4,869 for a female purchasing a real LA at age 65. Academic research¹³ suggests that it can be optimal to annuitise later rather than exercise the option to annuitise earlier.

Types of LIS and acronyms used

Fixed LIS:

Nominal immediate lifetime annuity	LA
Real immediate real lifetime annuity	RLA
Nominal deferred lifetime annuity	DLA
Real deferred lifetime annuity	RDLA
Investment-linked lifetime annuity	ILLA

Access to capital

In their pure form, LIS entail irrevocable commitment of all capital to the pool. However, this

has resulted in resistance to LIS purchase by many retirees. *All* providers have responded by offering some access to capital, although in some cases this is optional. This access inevitably comes at the cost of lower income, given that less capital is made available to the pool to fund mortality credits if the retiree dies. Limited access to capital typically comes in the form of death and/or exit benefits (i.e. payments), and may be provided in various forms:

- **Money-back guarantees** – Death benefits are paid out equal to the residual purchase value not already paid out (typically in the form of income).
- **Guaranteed death benefits** – A benefit equal to the initial purchase price is paid upon death.
- **Guarantee periods** – The value of remaining income is paid out as a lump sum in the event of death prior to an expiry period on the guarantee, e.g. 10-years.
- **Exit benefits** – The capital invested may be retrieved under certain conditions. There will typically be a penalty, which may include exit costs in addition to sacrificing the longevity insurance that the retiree has implicitly paid for.

Access to capital within a LIS may be subject to the ‘capital access schedule’ (CAS) under the SIS Act. The main requirement of the CAS is that access to capital declines over time and reaches zero after life expectancy. Further details on the CAS, including a chart describing the pattern of allowable access to capital under death and exit benefits, can be found on the [Department of Social Security website](#).

Age Pension eligibility

LIS interact with the eligibility for social security under means testing¹⁴, most notably for the Age Pension, at least for retirees who move through the Age Pension ‘taper zone’. In broad terms, 60% of all LIS payments are assessed as income for purpose of the income test; and 60% of the purchase amount is assessed under the assets test until life expectancy¹⁵ and 30% thereafter¹⁶. While these rules were designed with the intent of establishing neutrality between LIS and other forms of retirement savings, there exist some inconsistencies that open up potential for providers to design LIS in a way that can enhance Age Pension access¹⁷. Astute design can

¹² Rates accessed on 11 July 2024 at:

<https://www.challenger.com.au/personal/products/lifetime-annuities/lifetime-annuity-payment-rates>.

¹³ For instance, see Milevsky, M.A. and Young, V.R., 2007. “Annuitization and asset allocation”, *Journal of Economic Dynamics and Control*, 31(9), pp.3138-3177.

¹⁴ Also see [Department of Social Security](#).

¹⁵ Current life expectancy of a 65-year old male is 84 years.

¹⁶ These rules also apply when a person becomes a reversionary beneficiary of a lifetime income stream product upon the death of the original owner.

¹⁷ For instance, means testing under an ILLA references the initial capital contributed, and does not take into account growth in the value of capital through investment returns.

thus contribute to the attractiveness of LIS. Many providers highlight the Age Pension uplift as an additional benefit of their products.

Other considerations

- **Assumed investment return (AIR)¹⁸** – The AIR acts as mechanism to shape the pattern of income within an ILLA as the purchaser ages. The AIR might be viewed as a hurdle rate or reference rate of return. Generally, if returns exceed the AIR by x% then income is adjusted upwards by x%, and vice versa. The AIR may be set at any rate, with a higher AIR leading to more income being drawn initially. Underpinning the dynamics behind an ILLA is the concept that the income that is affordable and sustainable depends on ‘returns’ expected to be generated from the investments plus mortality credits. Against this background, the relation between the AIR and expected returns ‘tilts’ the expected income stream. Imposing a relatively high AIR versus expected returns tends to ‘tilt’ income downwards, as it raises the likelihood that realised returns will be less than the AIR requiring income to be adjusted downwards over time. Setting a relatively low AIR has the opposite effect, tilting the expected income stream upwards. Refer to Appendix 1 in [Explainer #5](#) for an illustration of how the tilting works.
- **Differential pricing** – One issue is whether LIS might be offered under differential pricing that recognises variation in life expectancy across individuals, e.g. males versus females. Charging a common price is simpler but can raise issues around member equity and cross-subsidisation. It also heightens selection risk. However, common pricing is more straightforward to implement, particularly under group pooling¹⁹.
- **Spouse reversionary income** – All providers offer an option for the income to revert to a spouse upon death of the purchaser, albeit this option will result in a lower level of income being provided.
- **Portability** – Portability is difficult to offer within a LIS structure, to the extent that there is reliance on having access to the capital of existing pool participants to fund the mortality credits. While it is possible that an LIS ‘book’ could be sold, LIS are typically structured in a way that individual participants are locked into the product for the remainder of their life, or face high cost to exit.

¹⁸ Other terms may be used for the AIR, including interest rate, income redistribution rate, and more.

¹⁹ Super funds may not have the same capability as insurance companies to implement differential pricing.

- **Fees** – We do not explore fees in detail, as it is a complex issue. Suffice to say that the cost of an LIS may appear in a variety of forms, including direct fees, lower income, fees paid to platforms or advisers, and even insurance premiums.

Potential use in retirement solutions

[Explainer #7](#) addresses the design of integrated retirement solutions that combine investments and potentially LIS with a drawdown strategy. Here we draw out selected points around how LIS might be used as building blocks within retirement solutions.

- **Scope to separate the capital-mortality credits trade-off from investment choice** – The primary function of a LIS is to provide access to mortality credits for retirees who need longevity protection, which are being traded-off against access to capital. The investment decision may be separated out from this trade-off by offering differing types of LIS, or coupling LIS with investment choice. For example, offering LIS paying a fixed income stream (‘fixed LIS’) alongside ILLAs over a flexible investment menu can couple mortality credits with any investment mix (recalling that fixed LIS are implicitly underpinned by fixed income investments). If only fixed LIS are made available, investment choice is constrained by the mortality credits being notionally attached to a fixed income investment. In this situation, fixed LIS can be used as a ‘defensive asset’ within the retirement solution. Here research²⁰ on ‘optimised’ strategies suggests that fixed LIS then tend to crowd out other defensive assets and should ideally be combined with 100% growth assets.
- **Retirees in the middle wealth zone may benefit most** – Retirees sitting ‘in the middle’ in terms of available assets might reap greatest benefit from LIS. Retirees with low assets have the Age Pension for longevity protection and may be better off using their modest retirement savings as a source of readily accessible funds when needed. For low-asset retirees, purchasing a LIS limits their accessible funds, which cuts against this ‘savings account’ function. Retirees with high assets often have more than enough to support a generous lifestyle as long as they live, and hence may not have any pressing need for longevity protection. We think of the ‘middle’ as those retiring with total

They may also face more hurdles in treating members differently in terms of perceived ‘fairness’.

²⁰ See Section 4 of our [Investing for retirement](#) report.

financial assets of between (roughly) \$300,000 and somewhere in excess of \$1 million.

- **Other influences on need for a LIS** – The need for a LIS can also vary with elements of a retiree’s personal circumstances and preferences other than financial assets. For instance, whether the retiree owns a house or has a partner may impact on the need for longevity protection (see [Explainer #4](#)). Some retirees may value certainty of income or like the peace of mind from knowing that some income is guaranteed for life, regardless of their available assets. Retirees with a strong bequest motive may wish to avoid committing any capital to a LIS altogether.
- **Providing confidence** – Including a LIS within a retirement solution can provide a retiree with confidence through the comfort that income will never run out (with the caveat that there is income downside risk under an ILLA). This can help mitigate the ‘fear of running out’ and encourage drawing down at a higher rate and investing less defensively in the investment component of the strategy, thus boosting income overall. Accessing these behavioural benefits requires framing LIS as providing income protection (discussed below).
- **Structuring for confidence** – An effective structure for providing confidence might be to combine fixed LIS for security combined with a 100% growth portfolio for income maximisation (see Section 4 of our [Investing for retirement](#) report of March 2024). The fixed LIS provides defensive exposure through fixed income-like payoffs that can be framed as ‘guaranteed income for life’. The idea of investing in a fixed LIS for defence and a growth portfolio for aspirational goals accords with goal-based investing and bucketing (see [Explainer #8](#)), which exploits the ‘narrow framing’ heuristic. An alternative way of forming a similar bundle of growth investment, defensive investment and mortality credits could be an ILLA where the underlying investment is a balanced fund (along the lines of the earlier charts). However, this structure tends to mute the framing (i.e. bucketing) benefits as an ILLA does not provide guaranteed income. Either of these solution designs should be much more effective than investing only in a balanced fund, which can be exhausted and hence abets fear of running out.
- **LIS income profile as secondary** – The income profile delivered by a LIS is somewhat secondary in the context of integrated retirement solutions

where the total income delivered is shaped by the drawdown from an account-based pension (ABP). Nevertheless, the income delivered by a LIS deserves consideration for three reasons. First, it will determine income as the ABP is exhausted. Second, drawdowns from ABPs are constrained by the minimum drawdown rules. Third, there may be age pension benefits from adjusting the mix of income derived from the ABP and the LIS when in the means-testing taper zone. Such considerations suggest purposefully designing the profile of all sources of income within a retirement solution.

- **Flexible access to funds need not be provided through the LIS** – We noted above that most LIS available in the market provide some limited access to capital such as death benefits in exchange for lower income, with a view to encouraging take-up. From the perspective of overall retirement solution design, the need to offer access to capital within the LIS is questionable. Flexible access to funds can be provided through the investments (e.g. an ABP) or perhaps a contingency account, as discussed in [Explainer #7](#). Furthermore, these mechanisms are more effective for providing flexible access to funds as they support unhindered, low-cost access to capital that can extend beyond life expectancy, which is not possible with a LIS subject to the CAS. The main reason to offer some access to capital within a LIS that forms part of a broader solution would be to help address behavioural effects that may cause resistance to LIS take-up (to be discussed below).
- **LIS may be administrated within an account structure** – It may be helpful to administer LIS within an account structure, particularly for super funds. Doing so might allow incorporation of LIS into an ABP structure, and can support member pooling through facilitating allocation of adjustments in pool value across members of the pool. To explain, we draw on ANU’s submission²¹ to Treasury’s [Superannuation in Retirement](#) consultation. The formula in the box over describes the structure. It involves debiting and crediting the member’s account for value-relevant items including drawdowns, any insurance premiums, fees, investment income and survival benefits (with mortality credits accounted for in the latter). AMP North uses an account structure in delivering its LIS; while Allianz has also designed their product to be offered within an ABP.

²¹ The submission is written by Associate Professors Adam Butt (adam.butt@anu.edu.au) and Gaurav Khemka

(gaurav.khemka@anu.edu.au). Please contact the authors for more detail.

LIS administered as an account

Opening account balance

- drawdowns
- insurance premiums
- fees
- + investment income
- + survival benefits
- = Closing account balance

Where:

- *Drawdowns* are income or exit benefits paid
- *Insurance premiums* pay for life insurance, where a death benefit is offered
- *Fees* are charges made directly against the account. Note: Fees may also be embedded in investment income or survival benefits.
- *Investment income* is guaranteed under an insured fixed LIS, or reflects returns on the underlying investments in an ILLA or pooled LIS
- *Survival benefits* are mortality credits accrued. These are guaranteed under an insured LIS; and may incorporate adjustments for the mortality experience of the pool under a pooled LIS. Death benefits can be framed as a reduction in survival benefits.

Currently available products

Appendix 1 summarises the LIS product offerings of six LIS providers in the Australian market as at end-July 2024, comparing them on selected features. As available LIS will be a moving feast, this analysis should be read as a 'snapshot in time'. We may update the analysis occasionally as need arises.

We comment on a few themes, and leave interested readers to examine the detail in Appendix 1.

- Of the six providers, four are for-profit product organisations (Allianz, AMP North, Challenger, Generation Life) and two are superannuation funds (ART, UniSuper). It is likely that LIS offerings by super funds will expand considerably going forward, perhaps with the assistance of life companies. (Side note: TAL has focused on assisting super funds in developing their LIS.)
- Nature and complexity of LIS varies considerably:
 - The two super funds offer basic products with limited design choice, including a single ILLA for ART and a single RLA for UniSuper. Making it simple for members appears a priority.
 - AMP North and Generation Life offer ILLAs with considerable flexibility to choose the features, especially choice of the underlying investments. These two providers currently only distribute

through financial advisers, and have designed their LIS with high functionality to assist advisers to service the needs of their clients.

- Allianz and Challenger supply their products to the broader market, although Telstra Super and very recently CSC currently offer annuities to its members that are managed by Challenger. Challenger provides a full suite of annuities (e.g. LA, RLA, DLA, RDLA, ILLAs). Allianz offer a single product (AGILE) that starts with a wealth accumulation phase (with downside protection and a cap) then rolls-over into either a LA or an ILLA. We say more on Allianz AGILE below.
- ART is the only provider using group pooling with respect to participants in the LIS. UniSuper pools together participants in its LIS with their defined benefit fund.
- Every provider offers a death benefit up until life expectancy (typically restricted by the CAS), with some allowing opt-out of death benefits in return for higher income. Allianz provides ongoing death benefits depending on the option (see below).
- Exit benefits (i.e. ability to take out capital) are quite variable. No exit benefits are offered by ART and UniSuper other than cooling off periods. AMP North, Challenger and Generation Life provide an option for exit benefits limited by the CAS. Allianz provides access to capital that may be either ongoing or limited by the CAS (see below).
- All providers offer the choice of spouse reversionary income (i.e. the income transfers to a spouse after death), in exchange for lower income.
- All providers require some contribution of capital to the pool upon death to support mortality credits, the exception being Allianz's main product where participants pay an insurance premium.
- Allianz's AGILE is a complex product with some distinguishing features. AGILE might be thought of as an investment to accumulate wealth (with downside protection and a cap around returns) in the first ('growth') phase, that rolls into either a LA or an ILLA in the second ('income') phase. The main product funds mortality credits by charging an insurance premium of 1.15% per annum, removing the need to contribute capital upon death and thus supporting complete access to any remaining capital (less withdrawal penalties). Allianz also offers an Age Pension+ Option that allows access to Age Pension uplift benefits (which are unavailable under the AGILE main product), under which death and exit benefits are restricted by the CAS thus involving sacrificing some capital upon death. The AGILE main product may also be

purchased and income drawn during the accumulation ('growth') phase, again provided that the Age Pension+ Option is not selected.

Why the low take-up?

The extremely low take-up of LIS is a worldwide phenomenon known as the 'annuity puzzle', reflecting the notion that it is at odds with rational decision models. Appendix 2 summarises 38 factors proposed in the literature that could be contributing to the limited use of LIS, drawing on a comprehensive literature review by MacDonald et al. (2013). The list includes 12 rational decision factors related to personal preferences and circumstances, 8 rational decision factors arising from environmental considerations, 16 behavioural biases and 2 factors related to lack of understanding²². We also include comments on the application of selected factors to Australia.

MacDonald et al. note that retirees may feel disinclined to annuitise for a single reason or a combination of reasons. The fact that multiple influences may be at play suggests there is no one cause and no silver bullet for increasing take-up of LIS. The potential presence of rational reasons implies that care should be taken to encourage take-up of LIS only where a retiree would clearly benefit.

Not all factors listed in Appendix 2 are important, and MacDonald et al. comment that some are not strongly supported by evidence from surveys or observed behaviours. Our perspective is that three broad factors are primary to understanding the lack of take-up and suggesting solutions for encouraging LIS participation where beneficial to a retiree:

- **Lack of understanding** – The very first hurdle is that many members do not know of the existence of LIS, and even where they do, they rarely understand the products or their benefits. Exacerbating the situation is that the nature and benefits of LIS may not be well-explained.
- **Framing** – LIS are often framed as a stand-alone investment product. This encourages a tendency by retirees to focus on the notional running yield and the concern that their capital might be sacrificed for little gain if they die early. (All the LIS products we reviewed are designed to offer some access to capital to help overcome this fear.) Investment framing leads to misunderstanding of the benefits of LIS in two ways. First, the role of LIS as a means of *insuring income for life* tends to be

overlooked. Second, narrow framing misses the role that LIS can play within an integrated retirement solution, including that access to capital can be provided through other solution components. Ideally LIS should be presented under consumption or insurance framing with a focus on income, rather than investment framing.

- **How LIS are offered** – LIS are often offered on a menu of options for retirees to purchase if they desire. This positions LIS as a choice option that retirees may find complex and confusing. Further hampering take-up is that only a few super funds currently offer LIS to their members (although many appear to be in development). Meanwhile, some financial advisers may be reluctant to recommend a LIS due to loss of control over the retiree's funds or perhaps not fully understanding the products themselves. In short, LIS is not often presented or 'sold' to members. Take-up becomes more likely to occur where an option is presented as a default, or at least a strong recommendation (or nudge). This rarely occurs for LIS²³.

Our take: Education and building LIS into retirement solution offerings is required

While LIS are not appropriate for every retiree, they are nevertheless quite underused by many retirees who could benefit. These benefits include not just boosting expected income and assisting in managing income risk, but also providing retirees with confidence that their basic needs are secured. We see value in concerted efforts to identify retirees who would benefit, and encouraging these retirees to take up a LIS through presenting it to them and explaining the benefits (such as confidence from having access to some additional income for life).

Three main measures may assist. First is *education* on the nature of LIS and their benefits and costs. Second is ensuring that *framing* is based around 'securing income for life' or similar, rather than as an investment product. Finally, and most importantly, LIS need to be presented as a *hard nudge* through inclusion within recommended retirement solutions for retirees who would clearly benefit. Presenting LIS as part of an integrated retirement solution would establish an 'anchor' that the LIS is beneficial and should be given strong consideration, while allowing the retiree to opt out if they want. Basically, we see a case for a good dose of 'libertarian paternalism'²⁴ when it comes to LIS.

²² We added this additional category at the suggestion of Professor Hazel Bateman of UNSW Sydney, which her research suggests is highly influential.

²³ CSC offers LIS as part of some retirement profiles.

²⁴ See Thaler, R.H. and Sunstein, C.R., 2003. "Libertarian paternalism", *American Economic Review*, 93(2), 175-179.

APPENDIX 1

Lifetime income streams available in the Australian market as at end-July 2024

Provider	Allianz Retire+	AMP North	Challenger	Generation Life	ART	UniSuper
Product suite name	AGILE	MyNorth Pension: Lifetime Income	Liquid Lifetime	LifeIncome	ART Lifetime Pension	Lifetime Income
Distribution channels (current situation)	Direct from provider; via platforms	Via financial advisers	Direct from provider; via platforms & some funds	Via financial advisers	Direct from fund	Direct from fund
Fixed LIS options	<i>Lifetime income phase 2:</i> Option** to roll into LA	No	LA, RLA, DLA, RDLA, part real, cash rate linked	No	No	Yes. RLA only.
Investment-linked options	<i>Growth phase 1:</i> capital is accumulated <i>Lifetime income phase 2:</i> Option** to roll into ILLA	ILLA with investment choice	ILLA with investment choice	ILLA with investment choice	ILLA without investment choice	No
Investment options	4 options in <i>phase 1:</i> Australian/global equities; return min 0%/partial -10% 1 option (AE, 0%) in <i>phase 2</i>	All on North platform	5 Cash, conservative, conservative balanced, balanced and growth	29	1 ART balanced risk- adjusted option for retirement income	n.a.
AIR (i.e. assumed investment return)	0%	6%	0%, with scope to set at between 1% and 5%	Choice of 2.5% and 5%	5%	n.a.
Immediate vs. deferred LIS	Accumulated wealth rolls into an ILLA or LA	Both	Both for fixed LIS Immediate only for ILLA	Immediate only	Immediate only	Immediate only
Longevity: insured or group pooling	Insured (provider)	Insured (TAL)	Insured (provider)	Insured* (Hannover Life Re)	Group pooling	Pooled with defined benefit plan
Exit benefit	Yes (CAS applies under option accessing Age Pension benefits)	Yes (optional, CAS applies)	Yes (optional, CAS applies)	Yes (optional, CAS applies)	No (6 month cooling off)	No
Death benefit	Yes	Yes	Yes	Yes	Yes	Yes ^
Spouse reversionary income option	Yes	Yes	Yes	Yes	Yes	Yes ^
Flexibility to adjust yearly drawdowns	Yes – option to draw in <i>phase 1</i> , flexible commencement <i>phase 2</i>	Yes – subject to a maximum payout	No	No	No	No
Consideration for mortality credits	Ongoing lifetime income premium of 1.15% p.a. (and capital left in pool under option accessing Age Pension benefits)	Capital left within the pool upon death	Capital left within the pool upon death	Capital left within the pool upon death	Capital left within the pool upon death	Capital left within the pool upon death

* GenLife has a capped provision to vary income if the mortality experience of the pool is different to expectations.

** AGILE allows choice on when to convert from growth phase to income phase, i.e. roll into an annuity.

^ UniSuper requires purchaser to choose either death benefit or reversionary spouse income option.

APPENDIX 2

Thirty-eight potential contributing factors limiting the use of LIS (i.e. annuities)

Factors (1), (2) and (3) are adapted from MacDonald, B.J., Jones, B., Morrison, R.J., Brown, R.L. and Hardy, M., 2013. "Research and reality A literature review on drawing down retirement financial savings", North American Actuarial Journal, 17(3), pp.181-215.

Factor (4) added at the suggestion of Prof. Hazel Bateman, UNSW Sydney.

Factor	Summary	Additional comments, including application to Australia
(1) Rational decision factors arising from personal preferences and circumstances		
(1a) Loss in liquidity	Annuitisation is a non-reversible decision: individuals cannot cancel an annuity and recover the principal.	Many annuities provide some access to capital, albeit often limited by capital not paid out as income and prohibitions on access beyond life expectancy.
(1b) Loss of bequest	Annuitised wealth cannot be left as a bequest.	Many annuities provide death benefits, albeit limited by capital not paid out as income and life expectancy.
(1c) Benefit to delay	Steeply increasing 'mortality premium' creates more advantageous annuity pricing as the retiree ages; hence may defer annuitisation to obtain a better price.	Can be somewhat overcome through purchasing a deferred annuity.
(1d) High risk tolerance	Retirees with high risk tolerance may be more willing to accept a volatile income stream and place less value on the stability offered by an annuity (reverse is also true).	
(1e) High personal discount rate	Individuals who place little value on future versus current consumption would have lower demand for annuities.	'Fear of running out' seems more important and runs in other direction.
(1f) Short life expectancy	Retirees in poor health could be averse to annuities as they do not anticipate a long future lifetime and view them as expensive.	Generous death benefit may help overcome this objection.
(1g) Ability to pool risk within families	May be expectation of inheritance from aging parents; in some cultures, the elderly are financially supported by their adult children.	Cultural angle is not highly relevant in Australia.
(1h) Confidence in personal financial abilities	Retiree may believe they will obtain a higher consumption by maintaining control of assets and investing them personally.	
(1i) Other sources of guaranteed income	Need to annuitise reduced by defined benefit pension plan or social security.	Age Pension is particularly important in Australia, especially for retirees with low wealth.
(1j) Sources of household wealth	Retirement savings may be illiquid (e.g. in property or businesses) and not available for annuitisation without tapping into the equity (e.g. reverse mortgage).	Majority of Australian retirees have superannuation, although not all do. Some insured products are able to accept non-super money.
(1k) Insufficient personal savings	Annuitisation can be unattractive for retirees with trivial balances.	In Australia, low balance members might retain their balance and rely on Age Pension as a form of annuity.
(1l) Debt	Reducing debt using financial savings makes more financial sense than purchasing an annuity.	Mortgage debt outstanding at retirement is increasing in Australia.

Factor	Summary	Additional comments, including application to Australia
(2) Rational decision factors arising from environmental limitations		
(2a) Expensive pricing	Annuities are overpriced from an actuarial perspective due to insurer costs and profit margin, including pricing for adverse selection.	This reduces but does not neutralise the benefits entirely. Group pooling could help overcome this issue, if provided at low cost.
(2b) Poor financial market environment	Retirees could be dissuaded from annuitising because of poor market conditions, e.g. low interest rates or a drop in the value of their wealth.	Less of an issue following rises in interest rates; potential implications for investment-linked annuities following poor market performance.
(2c) Incomplete annuity market	Payment stream available may not match the desired consumption path, e.g. most annuity products sold in the US are fixed in nominal terms; retiree could intend to reduce consumption with age.	Real annuities available in Australia; innovative products accommodate tilting the income stream through AIR.
(2d) Access	In the US, annuitisation as a distribution option is relatively rare in retirement savings plans.	Australian super funds traditionally have not offered annuities to members, but many developing ability to do so.
(2e) Seller incentives	Annuities fall into the same mental category as life insurance, which is sold not bought. Financial advisors may be averse to sell annuities where they lose future access to the funds and rollover commissions; non-affluent consumers may not get financial advice that might suggest an annuity.	No longer very relevant in Australia under financial advice reforms, and potentially by expanding advice through super funds, which may be less averse to recommending annuities.
(2f) Distrust of annuity providers	Lack of trust or confidence in insurance companies and financial institutions; risk of insurer default.	This barrier might be lessened by offering annuities through super funds.
(2g) Sex-distinct mortality assumptions	Use of sex-distinct mortality tables leads to higher prices for females than males, discouraging women from annuitising as 'unfair'; unisex annuities could similarly discourage men.	
(2h) Tax treatment	Depending on the country, tax treatments could be relevant; complexity of tax impacts may also act as a discouragement.	Tax irrelevant in Australia; treatment for Age Pension eligibility aims at neutral treatment, but can be exploited to increase incentive for take-up.
(3) Behavioural biases		
(3a) Decision framing	Viewing annuities through an 'investment frame' rather than 'consumption frame' can make them look like a risky and unattractive investment given positive probability of losing entire amount (upon death); manner in which annuities often presented to retirees exacerbates this issue.	Super funds may assist in overcoming this hurdle if financial advice reforms expand their capacity to give advice.
(3b) Longevity gamble	A life annuity could be viewed as a 'bet with the insurance company' that a retiree will exceed median life span; the odds in this gamble may be perceived to favour the insurer.	
(3c) Perception of insurance	View of insurance as only for 'bad' events, and since living a long time is not considered 'bad', the value of longevity insurance is not well-perceived.	
(3d) Absence of comprehensive plans	Retirees may apply rules of thumb, social norms and intuition in managing their wealth in retirement rather than developing a comprehensive retirement consumption plan, and hence may not contemplate annuities.	Potential to address if super funds offer comprehensive retirement solutions that incorporate annuities, or have enhanced ability to provide advice.
(3e) Control	Handing control over assets could be intimidating; some retirees may be attracted to managing their own income, and be subject to the 'illusion of control'.	Related to flexible access to funds objective, and how it be satisfied within the overall retirement solution.
(3f) Buyer's remorse	Fear of regret if interest rate or mortality assumptions change so that annuity could have been purchased at a better price, leading to purchase being delayed or not occurring.	

Factor	Summary	Additional comments, including application to Australia
(3g) Regret aversion	Desire to avoid the regret of purchasing an annuity, for instance, in case of being diagnosed shortly thereafter with a fatal disease.	
(3h) Misinformation	Imperfect information, such as ignorance of the features and availability of annuities.	We emphasise this point below through the 'lack of understanding' category.
(3i) Financial illiteracy	Poor financial literacy may affect the ability of some individuals to appropriately plan for retirement, impacting the decision to annuitise.	Also related to 'lack of understanding' category as included below.
(3j) Individuality	Social trend towards individuality, rather than working as a collective, works against the risk-pooling spirit of annuities.	
(3k) Default options	Default payout option of an employer's pension plan has a strong effect; when annuities are not the default option, the propensity not to annuitise is lessened.	Annuities currently not offered as part of comprehensive solutions in Australia, let alone as a default.
(3l) Historical view on personal retirement savings	Shift from the traditional defined benefit pension schemes toward individual savings (defined contribution) is a relatively recent phenomenon, implying potential lag in understanding annuities.	Australia's defined contribution system is well-established, but system still immature. Retirement phase has only recently come under close focus.
(3m) Procrastination	It is easier to do nothing than something, particularly with regard to important decisions like purchasing an annuity.	
(3n) Other	Other feasible behavioural biases include: (i) aversion to thinking about unpleasant events such as dying or being old and poor (ii) ignorance on the probability of survival (iii) fear of being viewed negatively as annuities unpopular	
(4) Poor understanding*		
(4a) Lack of awareness	Members may be unaware that annuities exist.	
(4b) Reaching a decision state that supports action	Members may not have the understanding and capability to decide whether to purchase an annuity is beneficial, even if aware of their existence.	

* This additional section builds on (3h) and (3i) and is motivated by the concept of decision states. For a discussion of decision states in the context of life insurance purchases by Australians, see Bateman, H., Gerrans, P., Thorp, S. and Zeng, Y., 2023. "Explaining consumers' progress through life insurance decision states: The role of personal values and consumer characteristics", *Journal of Consumer Affairs*, 57(3), pp.1151-1182. Research is currently being undertaken on decision states confirming the influence over annuity purchase, but this research is not yet publicly available.