



## Delivering Personalized, Optimal Retirement Income Strategies at Scale



### For a Full & Rich Retirement

**“Mass manufactured  
retirement income solutions will not work.  
A scalable, personalized optimal solution  
for decumulation is needed.”**

- CEO, Income Discovery





## Personalized Retirement Income Planning Is More Important Than Ever.

The transition from Defined Benefit (DB) to Defined Contribution (DC) plans has placed the risk and responsibility for converting savings into a safe stream of retirement income squarely on the shoulders of the retiree, who has little potential to succeed without professional guidance. A retiree's primary goal is to maximize retirement income while minimizing the risk of outliving it. To do this, they need to balance their retirement lifestyle expectation and investment allocation over a potentially long and uncertain timeframe. This is a complex problem for retirees to solve by themselves; they need professional guidance.

***Professional guidance is not being delivered to the masses - households with less than \$1 million of savings - who need it the most.***

Lacking guidance and unable to deal with the uncertainty of retirement income planning, baby boomers are putting off retirement in large numbers. Pew Research reports labor force participation rate for people over 65 has jumped from 13% in 2000, when many had access to a pension, to 29% in 2018<sup>1</sup>, when a pension has become a much smaller component of a retiree's income plan. And those who do retire, under the fear of running out of money, spend much less than they could with professional guidance - a phenomenon described as "induced poverty" by Professor Meir Statman.



<sup>1</sup> Pew Research, <https://www.pewresearch.org/fact-tank/2019/07/24/baby-boomers-us-labor-force/> and <https://www.pewsocialtrends.org/2009/09/03/ii-the-demography-of-work/>

During the accumulation phase of life, individuals were helped by mass manufactured asset allocation delivered in a low-cost manner through the innovation of Lifecycle Funds (LCF) inside DC plans. However, the LCF approach of segmenting age cohorts into the same asset allocation model doesn't work during the retirement decumulation phase.

## **A retirement income plan must be fully personalized to the retiree's unique needs:**

- When will each spouse retire?
- What are their lifespan expectations?
- When do they become eligible to claim Social Security benefits and how much are their benefits?
- How do they balance the trade-offs between income and bequest?
- How are assets spread across various tax type accounts?
- Do they plan to vary their expenses in retirement?

All of this creates a unique cash flow need which has to be optimally generated from Social Security benefits, lifetime income payments and investments. These cash flows must be paired with a structured withdrawal strategy across various incoming sources and investment accounts with different tax implications.

*Each retiree has unique cash flow needs, which have to be optimally generated from Social Security benefits, lifetime income payments and investments.*

This is why we've developed an easy outcome-based framework: the concept of Safe Income<sup>2</sup>.

## **What is Safe Income?**

**Safe Income** is the amount of retirement income that has a 90% opportunity of being available into a retiree's mid-90s. Safe Income consists of all sources of income (not just guaranteed sources): Social Security benefits, pension payments, lifetime income payments, withdrawals from investments and any other incoming cash flows, such as part-time work and rental income.

## **Why is Safe Income important?**

**Safe Income** establishes a baseline for how much a retiree can afford to spend with minimal risk of outliving their assets. Retirees can use safe income to compare alternative strategies for generating income.

2 Additional outcome-based metrics used in the framework are average legacy / bequest and cumulative shortfall dollars in the near-worst case. However, in this introductory white paper, we will primarily focus on Safe Income.



**Income Discovery**  
*For a Full & Rich Retirement*

## Introducing AIDA: Advanced Income Discovery Analytics

AIDA, Income Discovery's artificial intelligence engine, optimizes across thousands of income strategies, analyzing them through a Monte Carlo simulation to arrive at the best personalized strategy which provides the highest safe income for each client's unique situation.

### CASE STUDIES USING AIDA

We will use two different single member household cases to illustrate the many strengths of our state-of-the-art engine, AIDA. One household has a modest Social Security retirement benefit but no pension, and the other a higher Social Security retirement benefit with a small pension.

#### **Case study #1: Single household, primarily investable assets, no pension**

**George Bailey:** Date of birth 2/19/1957 (62 years old). George wants to retire in the year 2020. His planned lifespan is to age 94, which means he will have a 32-year retirement. George has saved \$650,000 to fund his retirement (\$400,000 in qualified

accounts and \$250,000 in non-qualified accounts with a 50% average cost basis) but, like many looking to retire today, has no other sources of income such as a pension. George has not yet filed for Social Security and his benefit at full retirement age (FRA) is \$2,400 per month. George's risk tolerance maps to a Moderate Aggressive portfolio.



**The Solution for  
Scalable Delivery of  
Personalized,  
Optimal Retirement  
Income Plans**

***AIDA provides the highest safe income for each client's unique situation.***





## George has the same questions facing many entering retirement:

- How much can he safely spend?
- When should he claim Social Security benefits?
- Should he consider annuitizing part of his savings to obtain lifetime income? If so, how much? Should it be broken up into immediate income or deferred income?
- Should he continue his current investment allocation (moderate aggressive based on his risk tolerance) or like other retirees reduce his investment risk?
- How should he withdraw money across non-qualified and qualified assets?
- Should he consider converting part of his qualified savings into Roth? If so, how much?

All the above components of George's retirement income plan, each a lever, interact with each other to impact his annual safe income. Finding the best combination of the levers, unique to George's situation, that will maximize his safe income is what AIDA does.

*By working with AIDA to find an optimal plan, George can enjoy a nearly 20% increase in his retirement income.*

### Current Plan

First, we determine George's safe income if he follows what an average retiree without professional guidance does: claims Social Security on retirement (meaning a reduced benefit), invests his savings conservatively, and does not purchase any lifetime income products. With such a strategy, George's after-tax safe income is **\$48,900**.

*The above safe income and subsequent safe income are real dollars with research-backed phased variation, where the income drops to 87% of the initial purchasing power after age 75, and drops further to 83% after age 85.*

### AIDA finds the Optimal plan

Working with AIDA to find an optimal plan tailored to his personal situation and needs, George can safely spend **\$57,500** per year; \$8,600 more, nearly a 20% increase, than his current plan. This additional income will significantly increase George's standard of living in retirement.



## The personalized combination of five levers that make up George's optimal safe retirement income plan are:

<b>Social Security</b>	Claim at 69
<b>Annuitization</b>	Buy a Single Premium Immediate Annuity (SPIA) with 50% of savings
<b>Asset Allocation</b>	Maintain current allocation of moderate aggressive (68% equity) for the balance
<b>Withdrawal Order</b>	1. Non-qualified 2. Qualified 3. Roth
<b>Tax Targeted Qualified Disbursal</b>	Target 12% effective tax rate for qualified to Roth conversion

The above levers work synergistically together in a combination determined by AIDA to maximize George's safe retirement income and constitute his personalized optimal plan.

Let's now examine in detail the first three levers to see the effect each one has on his annual safe retirement income.

## Social Security

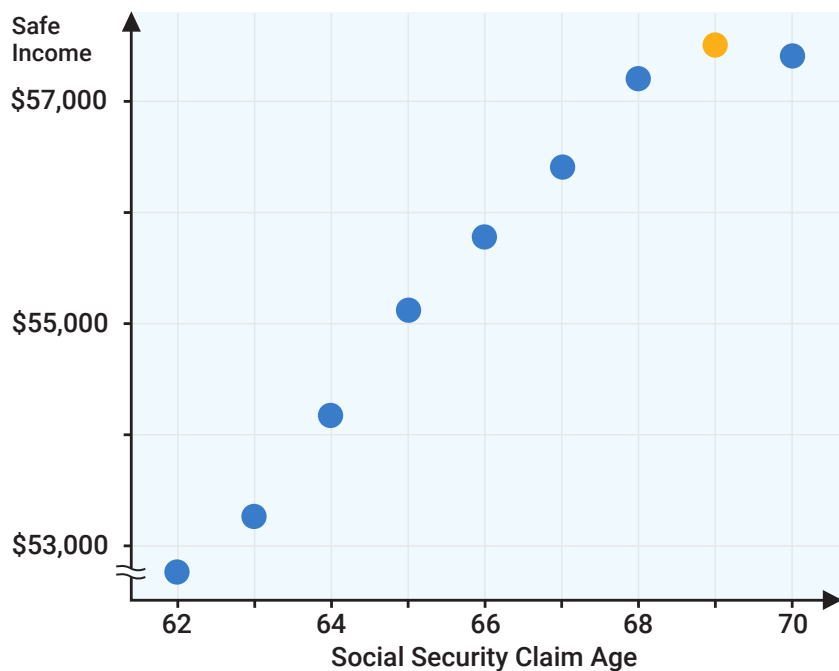
The primary lever a retiree has after deciding when they will retire is when to claim Social Security benefits. Many people retire before their full retirement age, often not by choice. They then typically claim Social Security benefits at retirement, meaning a reduced benefit. The benefits increase the longer one defers their claim, and an analysis focusing on just the Social Security lever will typically lead to the strategy that will maximize the benefits over the lifespan. Simply maximizing the lifetime benefit, however, may not always be the best option for a household's unique needs, as we demonstrate.

Figure 1 illustrates the maximum safe retirement income George can achieve at each Social Security benefit claim age, assuming all other levers are optimized. If George claims Social Security at retirement (at age 62), even if he optimizes his remaining levers (this is an important point that is further explained subsequently), his annual safe retirement income is \$52,800. Deferring Social Security increases George's safe income until he reaches age 69. Then, deferring Social Security further by one year to age 70 actually decreases his annual safe income, rather than increasing it, though it may increase his cumulative lifetime Social Security retirement benefits.

Figure 1 doesn't represent variation of just the Social Security claim age while other four levers are kept constant, as is done in

typical research or white papers. In fact, each dot represents the case that if the claim age was fixed, what other combination of the remaining four levers maximized the safe income. To better illustrate this point, see Table 1 for how the optimal strategy differs for two Social Security claim ages.

**Figure 1:**  
Safe Income Sensitivity to Social Security Claim Age



*Simply maximizing the lifetime benefit of Social Security may not always be the best option.*

**Table 1:**  
Optimal Strategies for Two Distinct Social Security Claim Ages

Social Security Claim Age	Age 62	Age 69
Annuitization	Single Premium Immediate Annuity (SPIA): 60% of savings <sup>3</sup> 15 Year Deferred Income Annuity (DIA): 10% of savings	SPIA: 50% of savings
Tax Targeted Qualified Disbursal	None	@12% effective targeted tax rate for qualified to Roth conversion

*Other levers of asset allocation and withdrawal order were the same for the optimal strategies for both cases of Social Security claim age.*

<sup>3</sup> For the research, no upper bound on annuitization was imposed. In practice, however, institutions typically maintain 30% - 50% maximum annuitization limit. AIDA optimizes within those limits.



That brings us to the point of synergistic combination of levers. The common practice in the industry is to look at many decisions, such as Social Security claiming strategies, in isolation. An isolated analysis on Social Security clearly leads to the conclusion that deferral claim until age 70 will maximize cumulative benefits over the planned lifespan. But that necessarily is not the best, as we saw above.

Secondly, deferring Social Security not only increases the safe income by itself; it also offers the opportunity to do Roth conversions targeting low tax rates, as seen above in Table 1, where on Social Security claim at age 62, Roth conversions are not optimal. The effects are synergies from the optimal combination of levers.

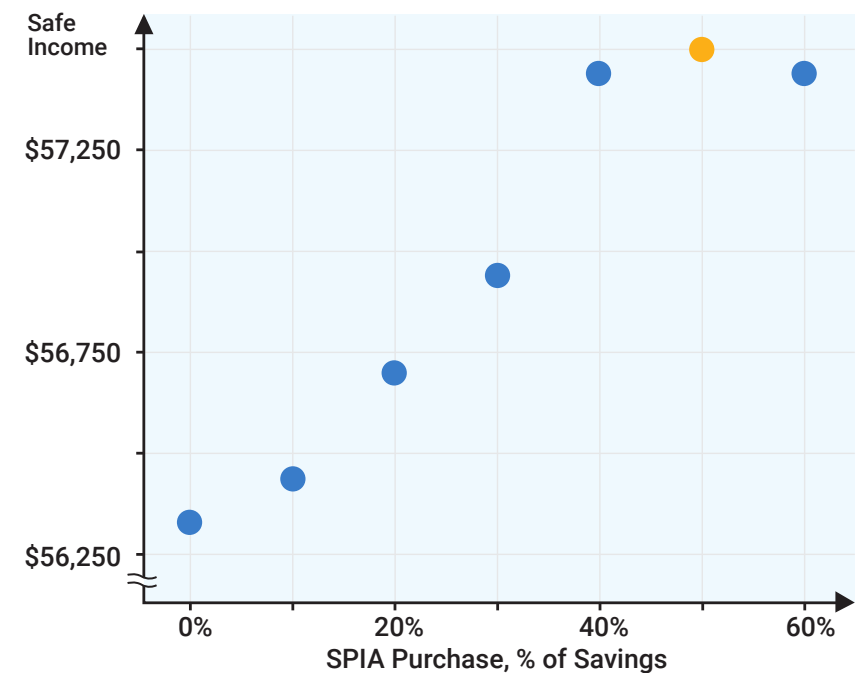
## Lifetime Income

After Social Security, the next lever for discussion is consideration of lifetime income products. AIDA considered using George's savings to purchase either a SPIA, a DIA, or a combination of both to increase George's Safe Income.

Figure 2 shows the maximum safe retirement income George can achieve at each level of lifetime income purchase. If George does not buy a SPIA (0% annuity in the figure) but uses the best combination of all other levers including Social Security, his maximum safe retirement income is \$56,300 per year. By moving 50% of his savings into a SPIA and optimizing other levers, George can realize an additional \$1,200 in annual Safe Income.

This observation is different from generally accepted advice that, before considering lifetime income from an annuity, the retiree must first defer Social Security claim all the way to age 70. But rather than deferring fully to age 70 and having no stable source of cash flow until then, the better option is to defer to age 69 and supplement it with a stable cash flow that begins on retirement from a SPIA.

**Figure 2:**  
Safe Income Sensitivity to Annuitization



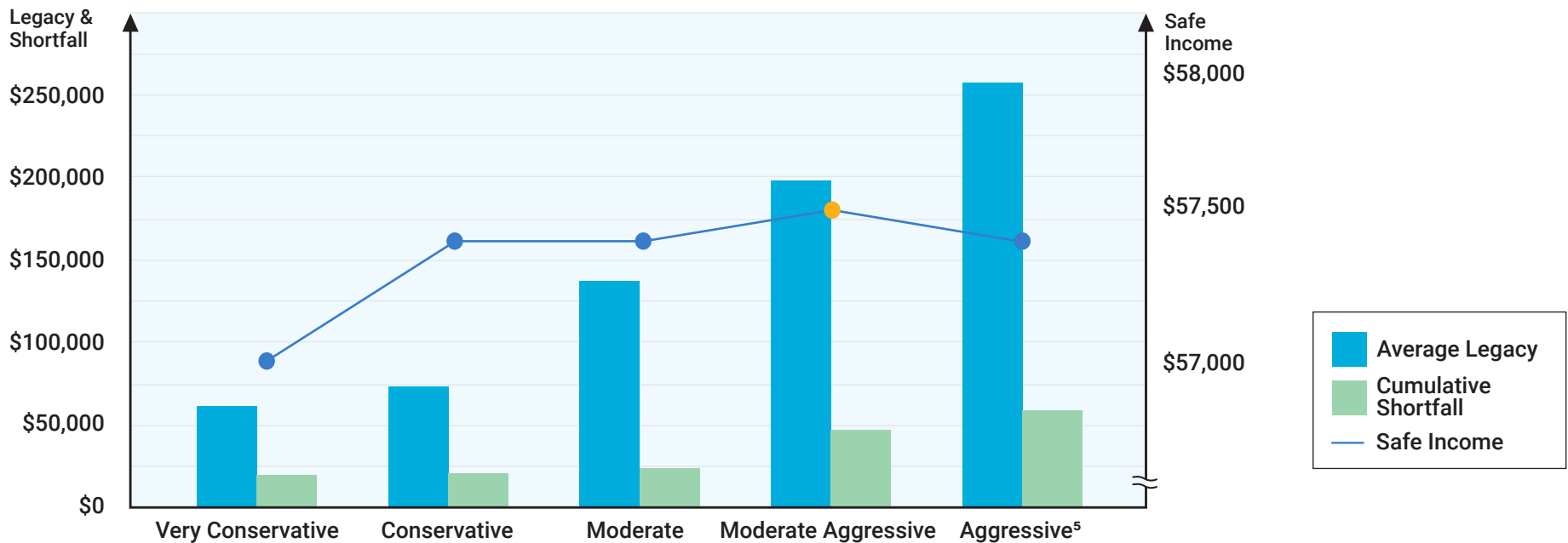


## Investment Allocation

After exploring the sensitivity of Safe Income to Social Security and lifetime income levers, we now focus on investment asset allocation. During pre-retirement, the investment asset allocation model is treated as the primary lever, followed closely by the savings rate. But post-retirement, its prominence diminishes from

the context of its effect on Safe Income. William P. Bengen pioneered the concept as Safe Withdrawal Rate (SWR) by running the analysis under historical return series to demonstrate that SWR was constant around 4.1% for a wide range of asset allocations<sup>4</sup>. We observe similar behavior in Figure 3. To illustrate the trade-offs facing retirees, for this lever, we also report Average Legacy,

**Figure 3:**  
Investment Allocation Impact



<sup>4</sup> William P. Bengen, Determining Withdrawal Rates Using Historical Data, 1994, Journal of Financial Planning (October): 171–180, and subsequent work building the point further.

<sup>5</sup> Even though the maximum risk portfolio George can tolerate is Moderate Aggressive, we present the numbers for one notch higher risk here to show further variation in Safe Income and other metrics.



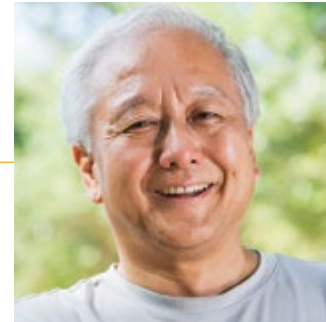
which is the median value of the portfolio at the end of the plan (representing the good return scenarios), and cumulative short-fall dollars in the near-worst case scenario<sup>6</sup>.

If all other levers are optimized, changing George's asset allocation from a very conservative portfolio (5% equity) to a moderate aggressive portfolio (68% equity) increases the annual Safe Retirement Income by only \$500. The moderate aggressive growth-oriented portfolio increases the average legacy significantly by 225%, but that increase comes at the risk of 145% higher cumulative shortfall in the near-worst case. Retirees are extremely concerned about running out of money, so presenting the best and the worst case outcomes helps them narrow their income strategy.

Figure 3 represents the case that if the investment allocation is fixed, what other combination of the remaining levers maximizes the safe income, a point made earlier in the section on Social Security claim variation.

## Case study #2: Single member household, high Social Security, small pension, low investable assets

**Mark Williams:** Date of birth 2/19/1957 (62 years old). Mark wants to retire at the beginning of the year 2020. Like George, he is expected to live to age 94, meaning his retirement plan will last for 32 years. Unlike George, Mark has only saved \$325,000 for



retirement (\$162,500 in qualified accounts and \$162,500 in non-qualified accounts with a 50% average cost basis), but he does have a \$6,000 annual pension and his Social Security monthly benefit at FRA is \$3,000. Mark has the same risk profile as George (Moderate Aggressive). For

the analysis, we use the same pattern as in George's case, starting with an average American strategy.

### Current plan

First, we determine Mark's safe income if he follows what an average retiree without professional guidance does: claims Social Security on retirement (meaning a reduced benefit), invests his savings conservatively, and does not purchase any lifetime income products. With this strategy, Mark's after-tax safe income is **\$47,200**.

### Optimal plan:

After analyzing Mark's situation, AIDA found that he can safely spend **\$52,800** per year; \$5,600 more, a 12% increase from his current plan.

*The same phased variation in income of 87% after age 75 and 83% after age 85, as mentioned in the first case study, also applies to Mark's plan.*

<sup>6</sup> See appendix to this paper for mathematical definitions of these metrics, other assumptions and details of the analysis.

Let's see how the optimal combination of levers differs for Mark compared to George in Table 2.

**Table 2:**  
How Optimal Strategies Differ for Two Households

	Mark's Optimal Plan	George's Optimal Plan
Social Security Claim Age	Age 68	Age 69
Purchase of Lifetime Income Annuities	SPIA: 10% of savings	SPIA: 50% of savings
Investment Asset Allocation	Conservative (23% equity)	Moderate Aggressive (68% equity)
Withdrawal Order	1. Non-qualified 2. Roth 3. Qualified	1. Non-qualified 2. Qualified 3. Roth
Tax Targeted Disbursal	Tax Target: 10% Use for Roth conversion	Tax Target: 12% Use for Roth conversion

*The optimal combination of levers differs for each individual, even if they are the same age, retire at the same time, and have the same lifespan expectation.*

Clearly, the optimal strategy for Mark is different than one for George, despite the fact that they are the same age, retire at the same time, and have the same lifespan expectation. The amount of savings relative to total lifetime income from pension and Social Security completely changes the optimal strategy. That is the main takeaway of this paper.

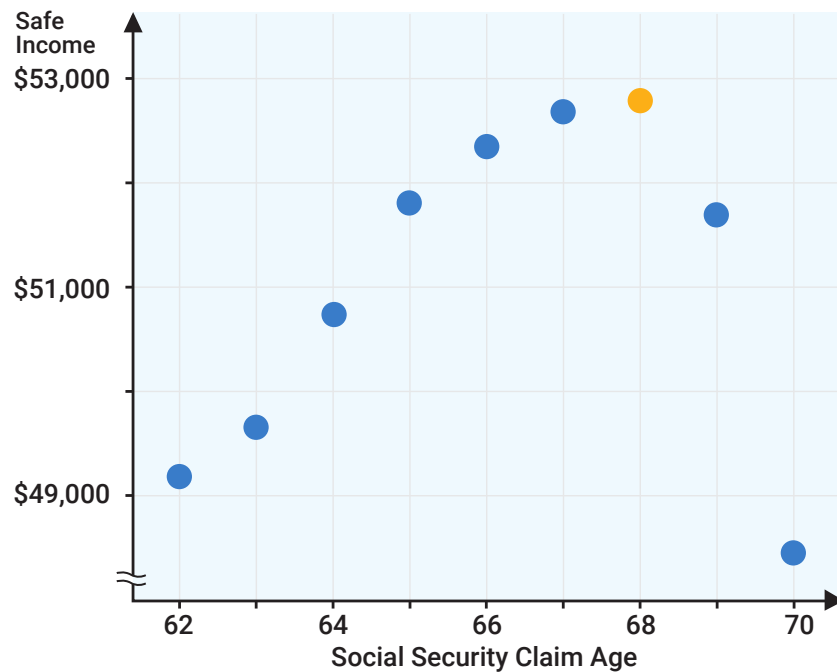
For the unique requirement of every client, a personalized optimal strategy exists that will maximize the client's **Safe Income**. AIDA finds that unique strategy.

To better grasp the stark differences in the optimal strategy, we present sensitivity to a few levers for Mark, just as we presented for George. We reiterate an important point: each sensitivity figure represents the strategy in which one of the levers is fixed and all other levers are optimized.



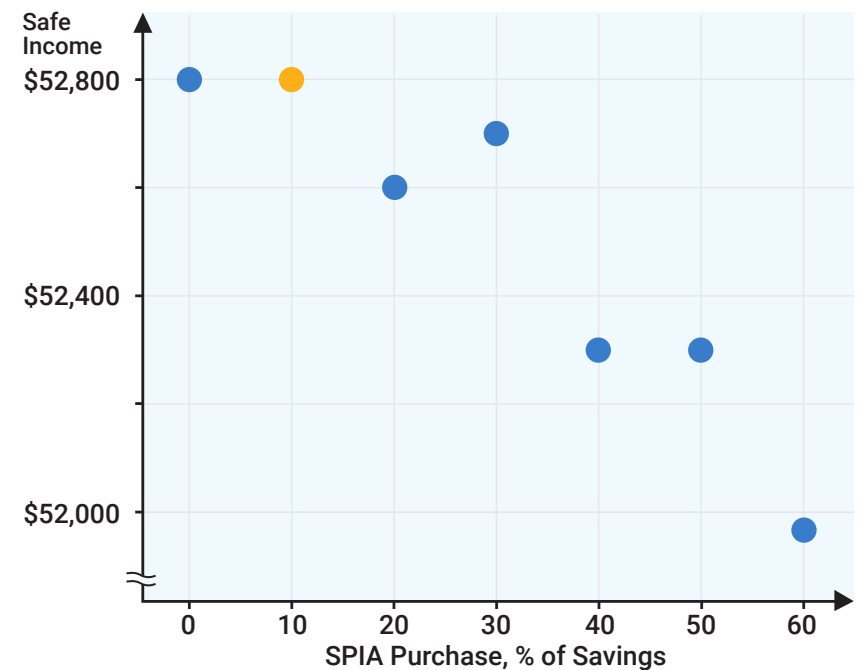
As seen in Figure 4, Safe Income increases with deferral of Social Security claim, peaking at age 68 and then starts to decrease rapidly. That is because Mark doesn't have sufficient savings to defer Social Security further. By deferring the claim age to 70, his safe retirement income drops to a level even less than if he had claimed the benefit on retiring at age 62.

**Figure 4:**  
Safe Income Sensitivity to Social Security Claim Age



*Retirement income strategies cannot be mass manufactured by applying one strategy for millions of clients, each of whom may have a unique financial situation.*

**Figure 5:**  
Safe Income Sensitivity to Annuitization

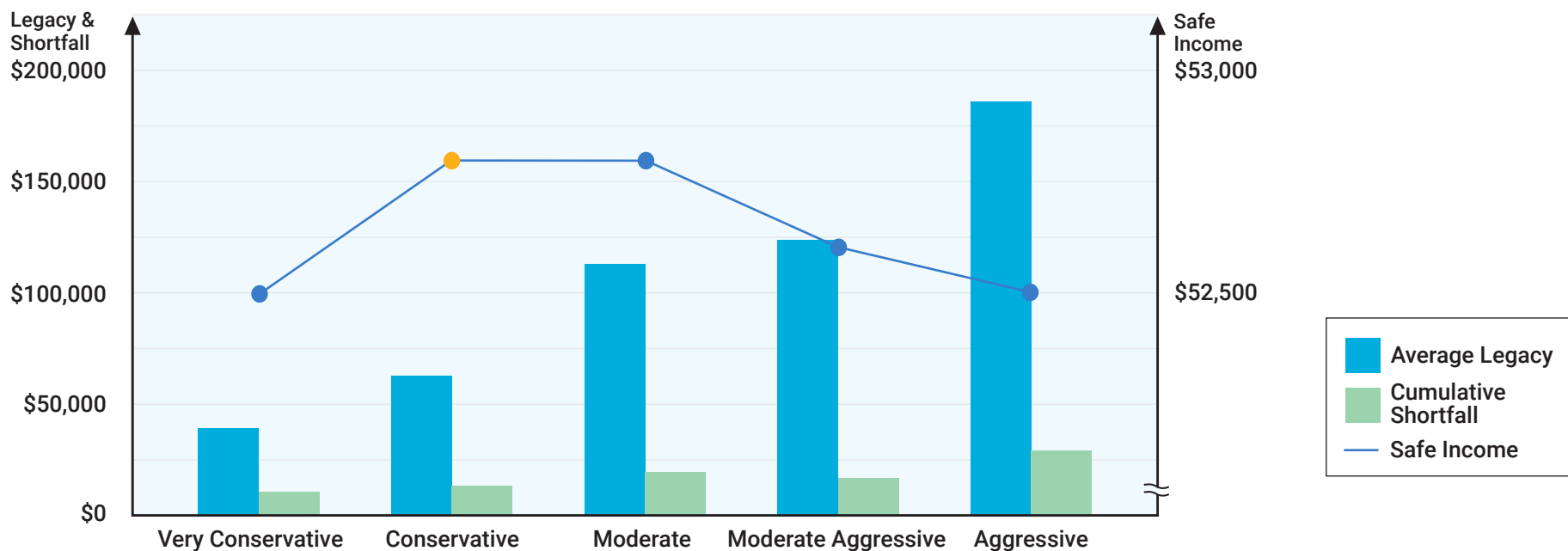


Even though Social Security claim deferral beyond age 68 is not beneficial, immediate lifetime income from a SPIA purchased with 10% of his savings<sup>7</sup> is beneficial. Using any more savings doesn't leave sufficient amount, thereby reducing Safe Income.

After deferring Social Security and annuitizing 10% of his savings, with the savings he has left, he can't take higher investment risk. This is because Mark's savings will fall sharply in his initial

retirement years because he uses the savings as primary source of his retirement income until Social Security starts. Again, this runs contrary to the popular perception among financial advisors that after building a base with Social Security, pension and annuities, the retiree should invest the balance more aggressively for growth. Yes, that approach benefits George, but not Mark. Lower returns but less volatile returns (and well below the risk-mapped portfolio for him) help Mark increase his safe income.

**Figure 6:**  
Investment Allocation Impact



<sup>7</sup> In Figure 5, no allocation to SPIA and a 10% allocation both produce the same amount of safe income. In such case, AIDA uses the secondary metric of cumulative shortfall dollars and, if needed, average legacy to determine the optimal strategy.





## Conclusion

With above two case studies, we have demonstrated the core point of this paper: Mass manufacturing of retirement income strategies, as is done for accumulation phase of life, is not feasible.

Each retiree based on his or her unique situation has a personalized optimal strategy. It can be found in an interactive session using the state-of-the-art AI engine, AIDA.

The second important takeaway of the paper is: Piecemeal approach of analyzing one lever at a time will not work and will lead to sub-optimal results. Personalized synergies are discovered within a few seconds by AIDA.

70 million mass affluent and affluent retirees are seeking retirement income guidance. Delivering personalized optimal strategies for each one of them, elevating them from “induced poverty” to a “Full & Rich Retirement” is feasible with AIDA.

## Important Disclosures

AIDA's analysis is intended to help a retiree evaluate how certain risk and reward trade-offs may impact the ability to reach their desired income goals. The amount of safe income and the optimal strategy varies depending on individual circumstances, annuity payout rates, and capital market return expectations. The accuracy of any analysis depends in part upon the accuracy of information and preferences provided by the retiree. Illustrations and outputs are provided as a directional tool and do not guarantee future investment returns, results, or cash flows. All calculations and results were generated through Monte Carlo simulations based on forward-looking capital market assumptions. Analysis projections may not consider all fees or investment expenses that are typically incurred.



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To see the assumptions used in this paper, including details of asset allocations, return expectations, and annuity payout rates, request the appendix by emailing [sales@incomediscovery.com](mailto:sales@incomediscovery.com)

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