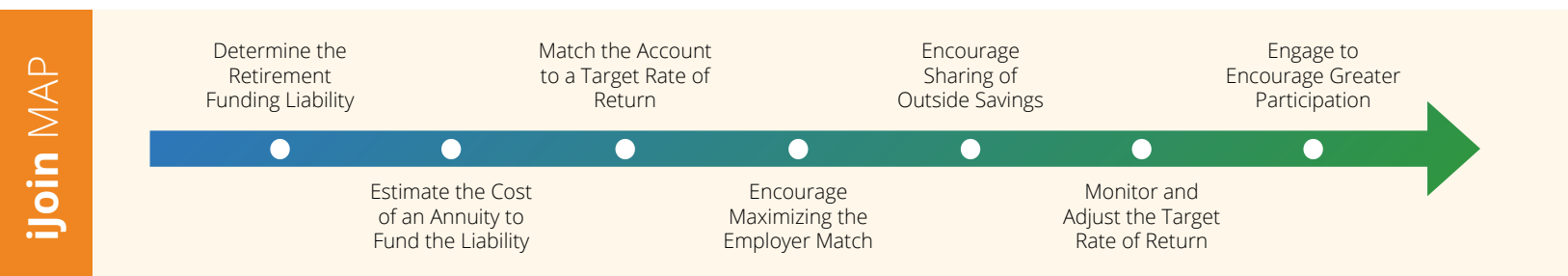# An Overview of Our Methodology, Calculations and Assumptions

At **iJoin**, we strive to personalize retirement success through a managed account program that:

1 Determines how much income each person will need to live through retirement.

2 Estimates the cost to purchase a hypothetical annuity that would fund this liability (goal).

3 Matches the user to a Target Rate of Return in order to fund 95% or greater of that goal.

4 Encourages the user to maximize an employer match to accelerate account growth and potentially lower their associated target return need (which reduces risk).

5 Encourages the user to share other savings held outside the plan to more accurately forecast the future liability and potentially lower the associated investment target return.

6 Continuously monitors and adjusts the Target Rate of Return (and associated risk) based on account growth, savings rate and other factors.

7 Engages the user regularly to encourage greater participation and to strive to achieve a better long-term outcome.

iJoin MAP

Determine the Retirement Funding Liability

Estimate the Cost of an Annuity to Fund the Liability

Match the Account to a Target Rate of Return

Encourage Maximizing the Employer Match

Encourage Sharing of Outside Savings

Monitor and Adjust the Target Rate of Return

Engage to Encourage Greater Participation

Modeling the Funding Liability

Our proprietary internal calculation engine determines each individual's liability in retirement (retirement income replacement goal) and matches that to a Target Rate of Return (TRR) or Expected Rate of Return (ERR). This value is matched to investments in the fund lineup that meet the TRR or ERR criteria established by the Investment Manager.

We define the liability (goal) as the present value of an annuity that would yield 95% of an individual's projected retirement income need.

Unlike some other programs, we use a dynamic methodology to calculate a customized income replacement rate rather than use a static rate. Our calculator attempts to solve for a wage replacement rate of 60-90% based on many important factors. A study from Dimensional Fund Advisors recommends that people making $25,870 or less need about 82% of their pre-retirement income to maintain their standard of living. Those making $86,882 or more need about 58% of their income. This is consistent with other studies on Retirement Income needs and LDI uses this study to calculate the assumed replacement income each user will need in retirement.

See: *https://us.dimensional.com/-/media/Dimensional/Documents/US/Auxiliary/Defined-Contribution/In-Review-DC-Thought-Leadership.pdf*

Solving for Both the Funding Liability AND Goal Completion

In addition to solving or modeling the funding liability, the calculator determines the percentage of goal completion using factors, including:

» Income

» Savings (including assets held outside the plan)

» Employer matching contributions

» Social Security benefits[1]

» Gender

» Geographic cost-of-living considerations

» Where you live / intend to live in retirement

» Tax implications

» Investment rates of return

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[1] **How we calculate what Social Security will replace**

LDI uses a proprietary calculator that simulates methodology used on the DOL's website on Social Security each year to calculate the amount of money individuals will receive from retirement assuming no wage inflation. This is consistent with the Department of Labor's Advanced Notice on Proposed Rule Making regarding retirement income projections which states that all such projections should be in today's dollars.

See: *https://www.federalregister.gov/documents/2013/05/08/2013-10636/pension-benefit-statements*

Liability Driven Investing

Liability Driven Investing is an approach that seeks to target investment returns to fund a known liability. We have taken this model from the Defined Benefit marketplace where it has been deployed for decades and applied it to meet the needs of individual users in 401(k) and other Defined Contribution plans.

Our QDIA / Managed Account Approach

A retirement plan's Qualified Default Investment Alternative (QDIA) provides a vehicle for a professionally managed account program to serve the needs of individual savers. We have evolved the opportunity to model goal completion more discretely and assign, continuously monitor and update the investment strategy for each user based on market performance, accumulated savings, contribution rates, and other factors.

Investment Approach

While past performance of the capital markets is no guarantee of future results, it has demonstrated over many decades that risk is generally rewarded when the investor has an adequate time horizon to withstand inevitable market downturns. This perspective is essential in balancing our orientation to seek long-term growth with the need to preserve capital as users approach retirement age. This informs our investment management style and guardrail philosophy.

Risk Profile	Target Return
Conservative	3%
Moderately Conservative	4%
Moderate	5%
Moderately Aggressive	6%
Aggressive	7%

Target Return Range

Adjusting Over Time

The LDI Calculator strives to achieve 95% or greater of the retirement funding goal and determines the appropriate target return needed to meet this objective. This is continuously recalculated over time and reassigned (up or down) to continue to align to the goal.

Custom Investment Lineups

LDI technology is designed to accommodate a retirement plan's existing investment lineup and 3(38) Investment Manager. The core logic may be applied to investment lineups seeking to achieve a Target Rate of Return or an Expected Rate of Return.

Time Horizon Guardrails

Our investing philosophy is to seek growth for savers with long time horizons and to moderate that exposure as their time to retirement age comes nearer.

We know some savers start too late or save too little to fully meet this goal. In these instances, the calculator will default to its maximum suggested value for the user's time horizon available.

	Target Rate of Return	Expected[1] Rate of Return	Equity Target	Equity Range	Years to Retirement Age						
					35 yrs	30 yrs	25 yrs	20 yrs	7 yrs	5 yrs	3 yrs
Conservative	3%	2.3%	20%	5 - 35%				3%	3%	3%	3%
Mod-Conservative	4%	3.3%	40%	25 - 55%				4%	4%	4%	
Moderate	5%	4.4%	60%	45 - 75%				5%	5%		
Mod-Aggressive	6%	5.4%	80%	65 - 85%			6%	6%			
Aggressive	7%	6.2%	95%	75 - 95%	7%	7%	7%	7%			

For savers with 30 years or more until retirement age we seek **Aggressive Growth** with an investment return[2] of 7%, irrespective of the individual user's goal completion. We anticipate that, in many cases, the calculator would default to this value anyway given the propensity of many people to delay saving for retirement.

At 25 years to retirement age we allow the calculator to assign **Moderately Aggressive Growth** or **Aggressive Growth** (6-7%) if the user's goal completion warrants.

At 20 years to retirement the calculator is unconstrained to assign the full range of target returns from **Conservative** to **Aggressive** (3-7%) based on each user's goal completion.

At 7 years to retirement we adopt a more moderate posture, reducing equity exposure and its accompanying market risk. The calculator may assign a **Conservative** to **Moderate** target return (3-5%) based on each user's goal completion.

At 5 years to retirement we further constrain our posture to seeking only **Conservative** to **Moderately Conservative** returns (3-4%).

7 Years	5 Years
3%	3%
4%	4%
5%	

Between 7 years and 3 years to retirement, the calculator will adjust the user's assigned target return to step down equity exposure and market risk on a quarterly basis. This action reduces the target return by 1/8% per quarter or 1/2% per year. Over the four-year period ending at 3 years to retirement, the target return is reduced from 5% to 3%.

At 3 years to retirement we are strictly **Conservative**, seeking a 3% target return where we maintain the lowest equity exposure and related risk in the portfolio lineup.

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[1] Expected Rates of Return are sourced from BlackRock, published Quarterly based on the long-term 10-year Return from its Capital Market Assumptions, as published on 6/30/2020.

[2] Return on investment in this section refers to "target return" assumption as dictated by the retirement plan's advisor.

See: *https://www.blackrock.com/institutions/en-us/insights/charts/capital-market-assumptions*

Calculations and Assumptions

How we calculate the impact of savings on paychecks

To estimate the paycheck impact of increased savings, we reduce the total amount of savings by the marginal Federal Tax Bracket at the user's salary level plus the marginal tax bracket for the State of Residence and current marital status.

How we estimate rate of return for each portfolio

Estimated rates of return are determined by mapping the individual securities in each portfolio to a specific asset class as published by BlackRock Institute. BlackRock publishes long-term expected return values for many asset classes using capital market return assumptions. We estimate the overall rate of return for an LDI portfolio by aggregating the BlackRock returns data according to the asset class composition of the portfolio.

How we define estimated return on assets held outside the plan

Assets held outside the plan are factored into retirement income goal completion for each user. We default to a 7% ROR for outside assets consistent with guidance on the DOL's website. However, an administrator may adjust the ROR at the plan level based on preference. Dividends from outside investments are not included in any rate of return or retirement income calculation.

How we define retirement income needed

A study from Dimensional Fund Advisors recommends that people making $25,870 or less need about 82% of their pre-retirement income to maintain their standard of living. Those making $86,882 or more need about 58% of their income. This is consistent with other studies on Retirement Income needs and LDI uses this study to calculate the assumed replacement income each user will need in retirement.

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See: *https://www.federalregister.gov/documents/2013/05/08/2013-10636/pension-benefit-statements*

Disclosures

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