

# Target-date funds Laying a critical foundation for retirement success

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## Agenda

- A refresher on target-date fund design
- Reminding ourselves why TDFs exist in the first place
- Solving the decumulation riddle – a global quest
- Focusing on the things you can actually control
- You can never invest your way out of a savings deficit

## Our mission

To take a stand for all investors, to treat them fairly,  
and to give them the best chance for investment success.

**\$4.6 trillion** under management

**371** mutual funds and ETFs

**20** million clients in **170** countries

**15,000** employees

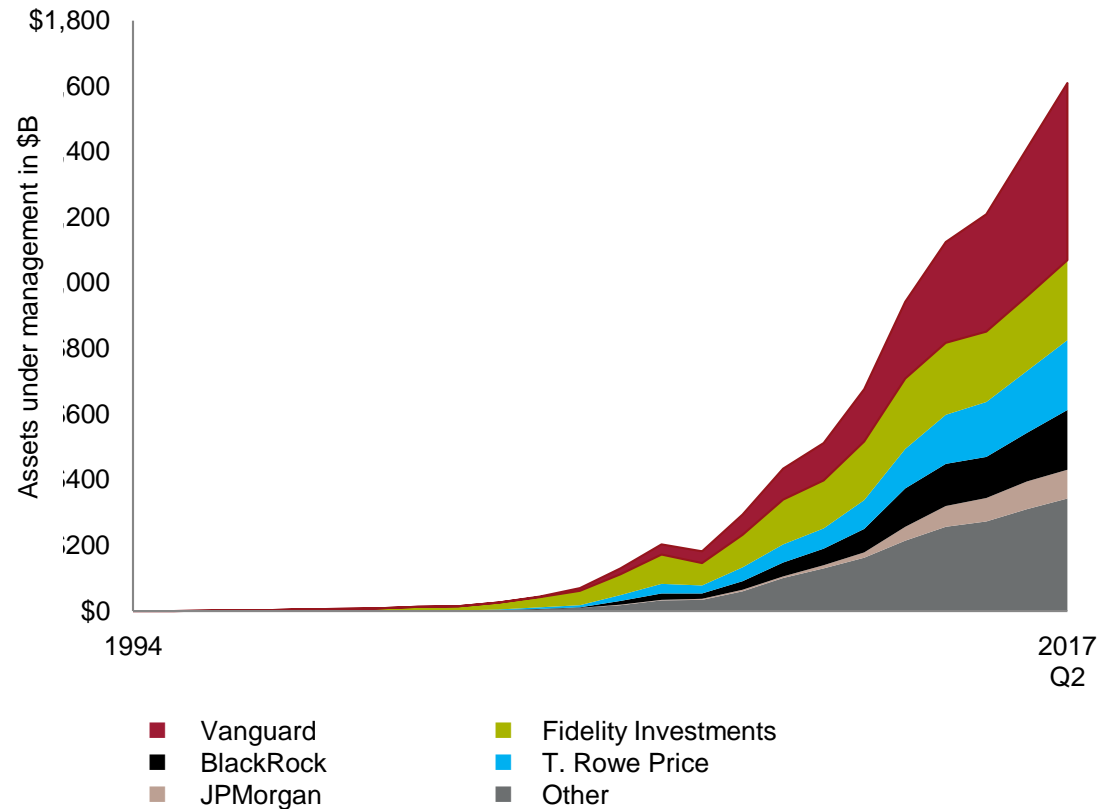
**18** offices



Source: The Vanguard Group, Inc., as of August 31, 2017, except number of offices, which is as of October 2, 2017. Asset figures are in USD.

## Vanguard is the global leader in target-date funds

Annual target-date assets under management since 1994



**1/3** Industry AUM

**60%** Industry cash flow since 2016

**90%** Industry index-based cash flow since 2016

Sources: Vanguard, Morningstar, company public filings, as of June 30, 2017. Figures based on U.S. funds.

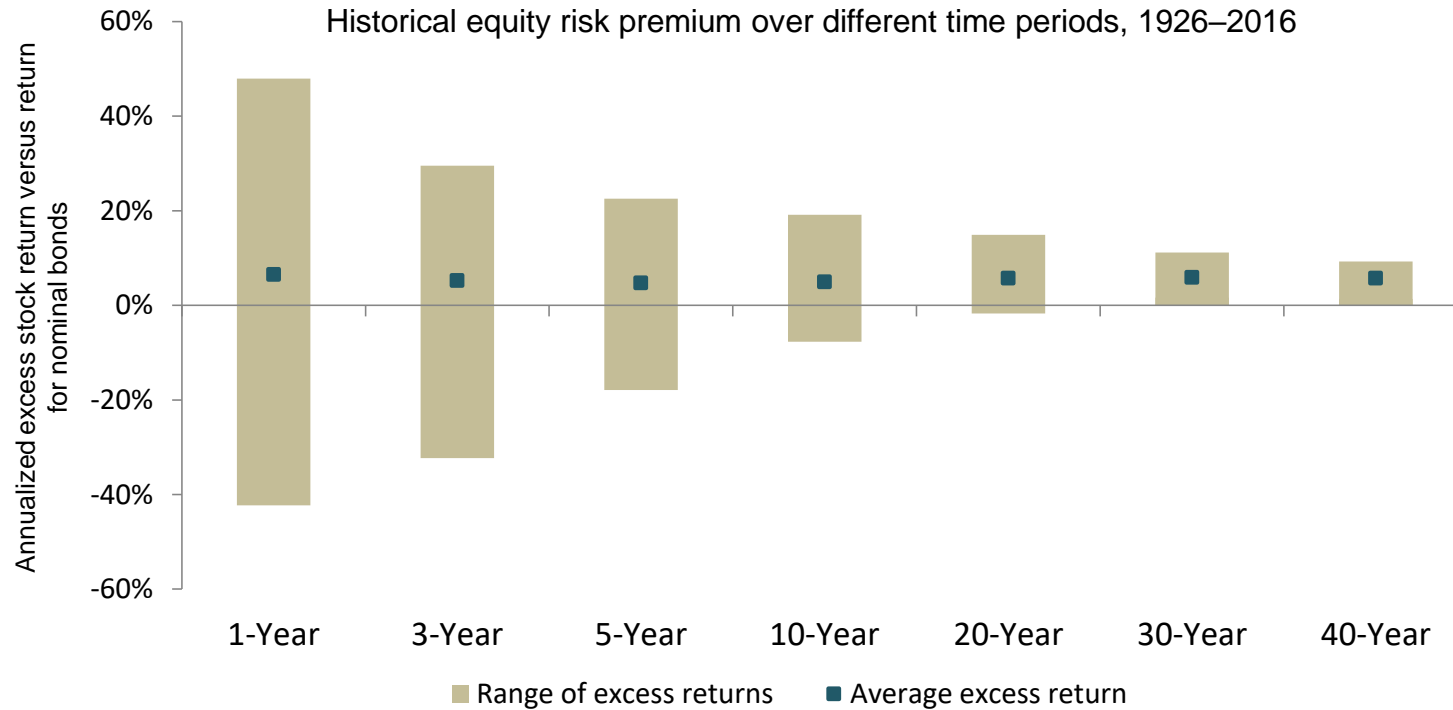
Sources: Vanguard and Morningstar, as of June 30, 2017.

# A refresher on target-date fund design

## The foundational principles of target-date fund design

- Long-term investors are rewarded for taking market risk
- Total wealth includes both **financial assets** and **human capital**
- As human capital declines with age, investors should take less risk in their financial assets
- A well-designed target-date fund should be built on both sound **financial theory** and **investor behavior**

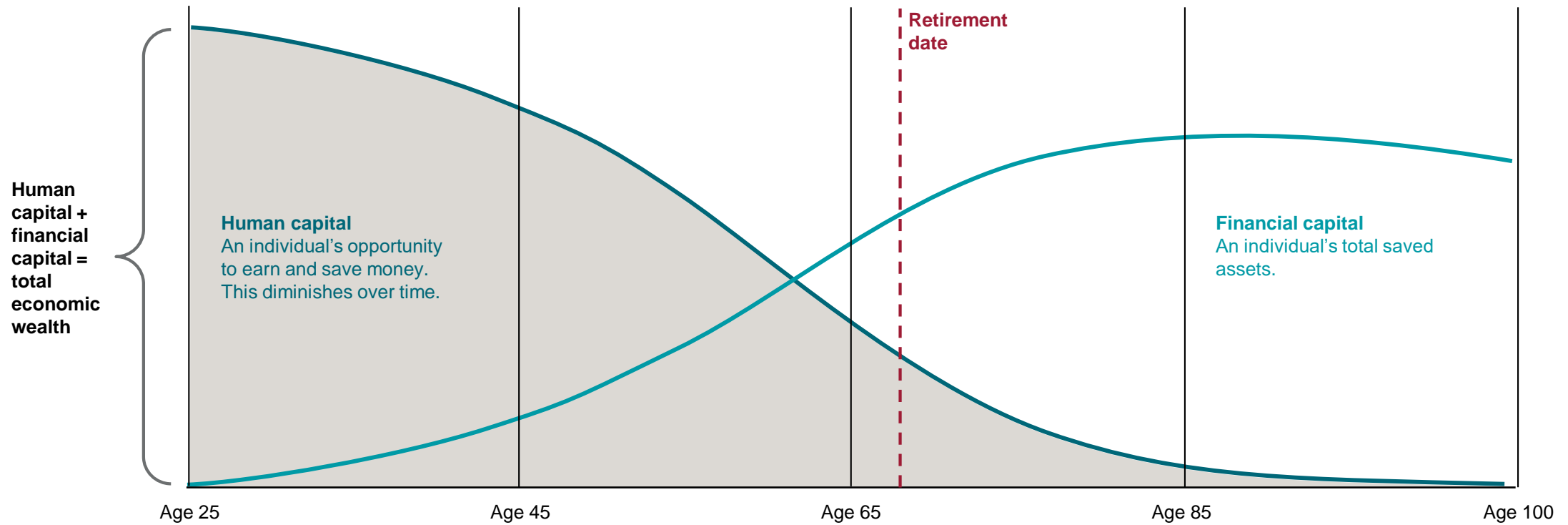
## Long-term investors are rewarded for taking market risk



Notes: Past performance is no guarantee of future results. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index. U.S. stock market returns are represented by the Standard & Poors 90 from 1926 through March 3, 1957; the Standard & Poors 500 Index from March 4, 1957, through 1974; the Wilshire 5000 Index from 1975 through April 22, 2005; the MSCI US Broad Market Index from April 23, 2005, through June 2, 2013; and the CRSP US Total Market Index thereafter. U.S. bond market returns are represented by the Standard & Poors High Grade Corporate Index from 1926 to 1968; the Citigroup High Grade Index from 1969 to 1972; the Lehman Brothers US Long Credit AA Index from 1973 to 1975; the Barclays Capital U.S. Aggregate Bond Index from 1976 to 2009; and the Spliced Barclays U.S. Aggregate Float Adjusted Bond Index thereafter.

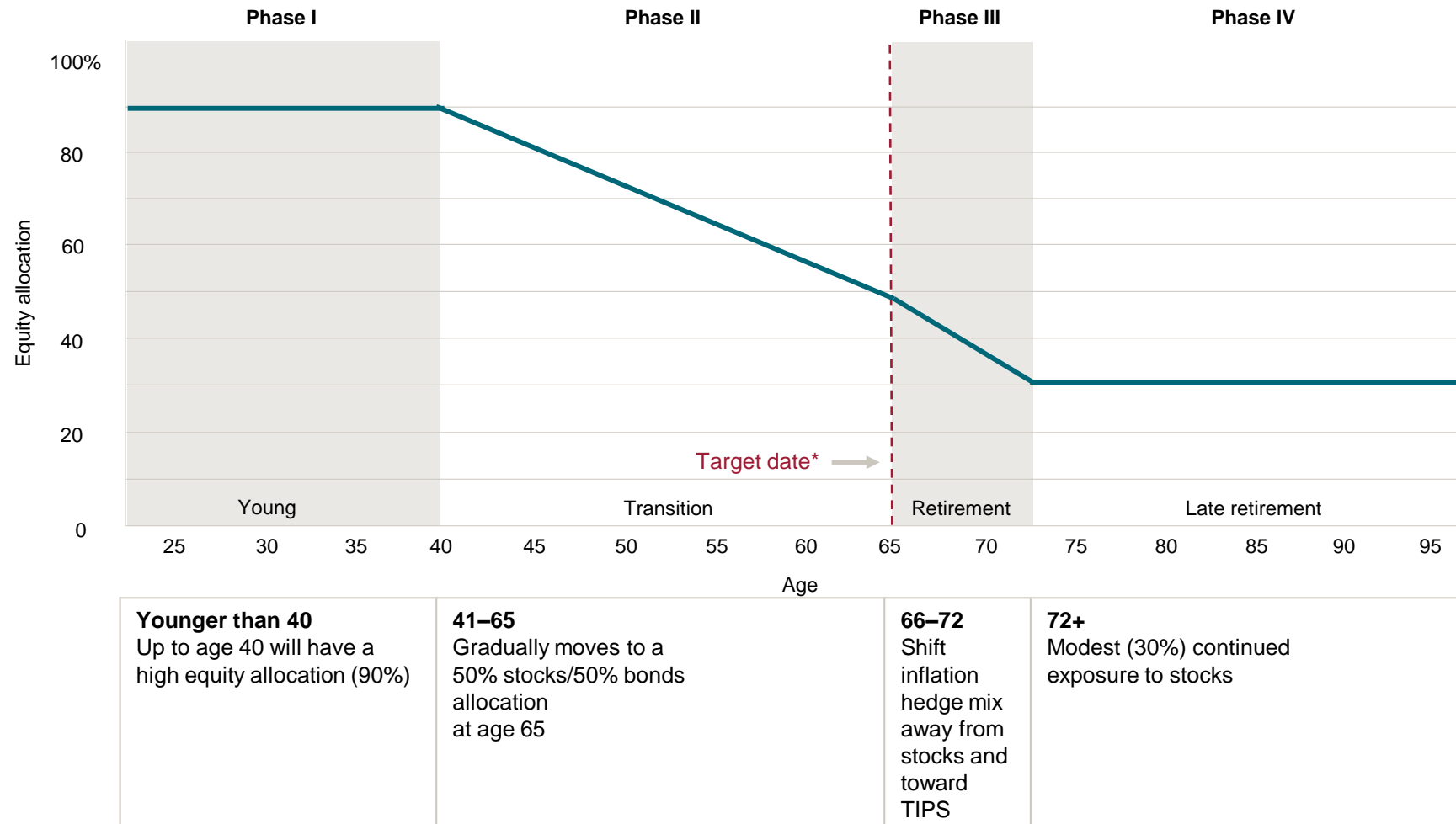
Source: Vanguard calculations, based on data from Standard & Poor's, Wilshire, MSCI, CRSP, Citigroup, and Barclays.

## As human capital declines with age, investors should take less risk in their financial assets





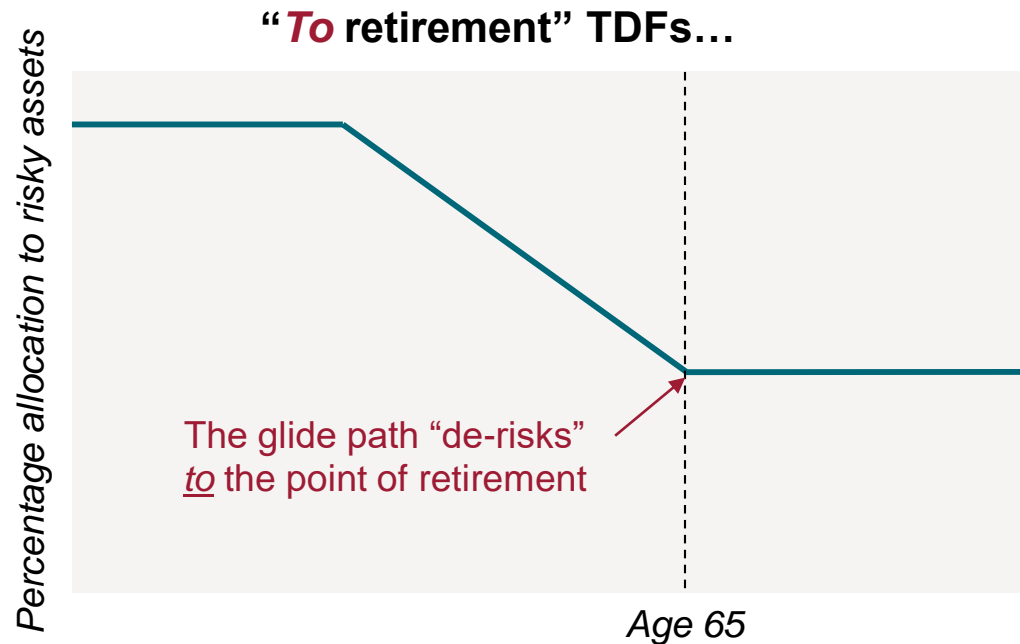
## The glide path sets the exposure to risky assets (i.e. equities) throughout the investor's life cycle



<p><b>Younger than 40</b> Up to age 40 will have a high equity allocation (90%)</p>	<p><b>41–65</b> Gradually moves to a 50% stocks/50% bonds allocation at age 65</p>	<p><b>66–72</b> Shift inflation hedge mix away from stocks and toward TIPS</p>	<p><b>72+</b> Modest (30%) continued exposure to stocks</p>
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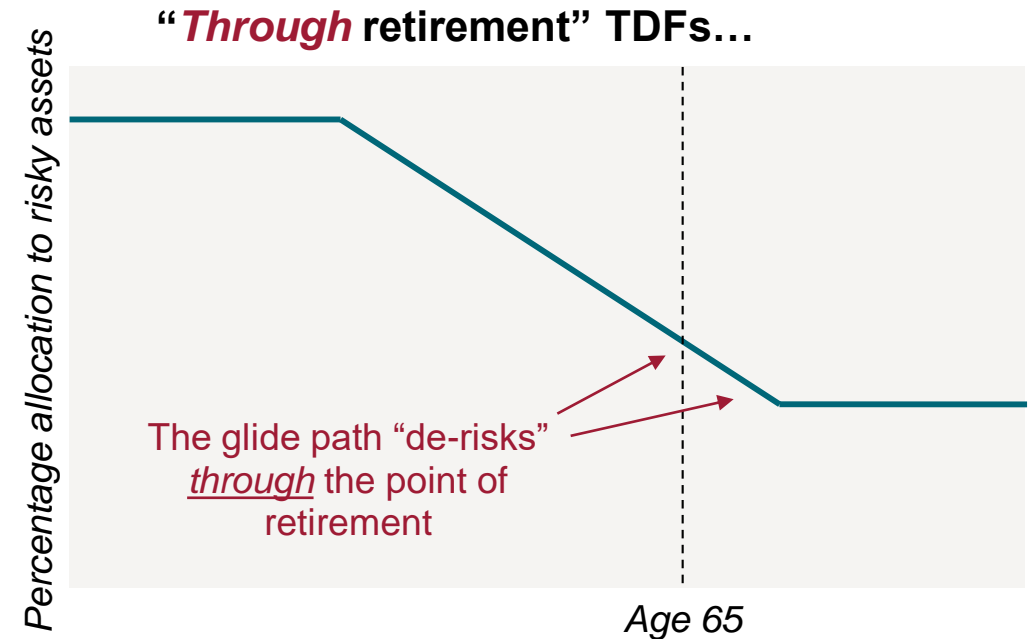
\* Target date is the year stated in the fund name. Target-date fund allocations are based on a projected retirement age of 65.

## The “to” vs. “through” debate: The intersection of financial theory and observable investor behavior



### The rationale for “to” TDFs

- Human capital is zero at retirement
- Many participants withdraw assets from their employer retirement plans at retirement

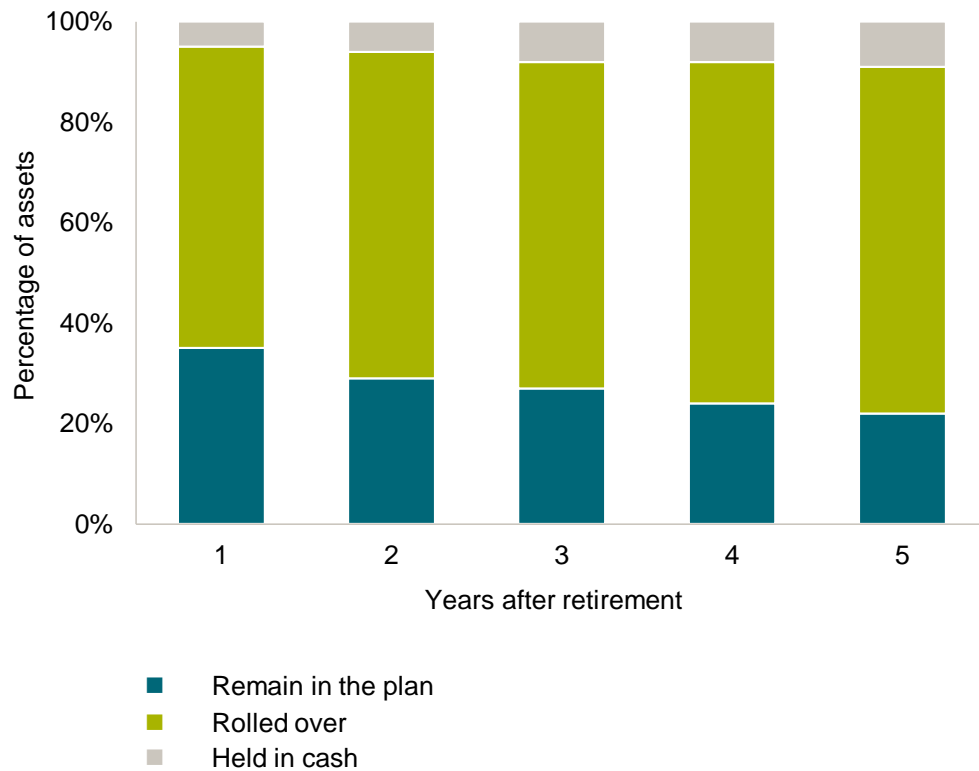


### The rationale for “through” TDFs

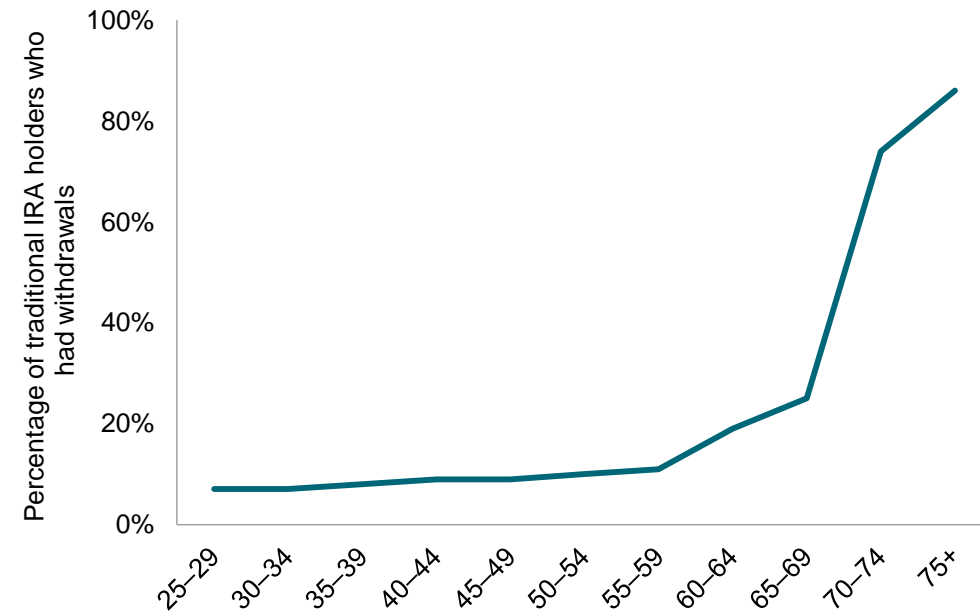
- Empirical data showing DC wealth is not converted to retirement income until members are in their early 70s
- Desire to capture more of the equity risk premium before wealth is drawn down

## Investor behavior drives Vanguard’s “through retirement” approach to its U.S. target-date funds

Yes, 5 years after retirement 75% of assets have left the plan, but...



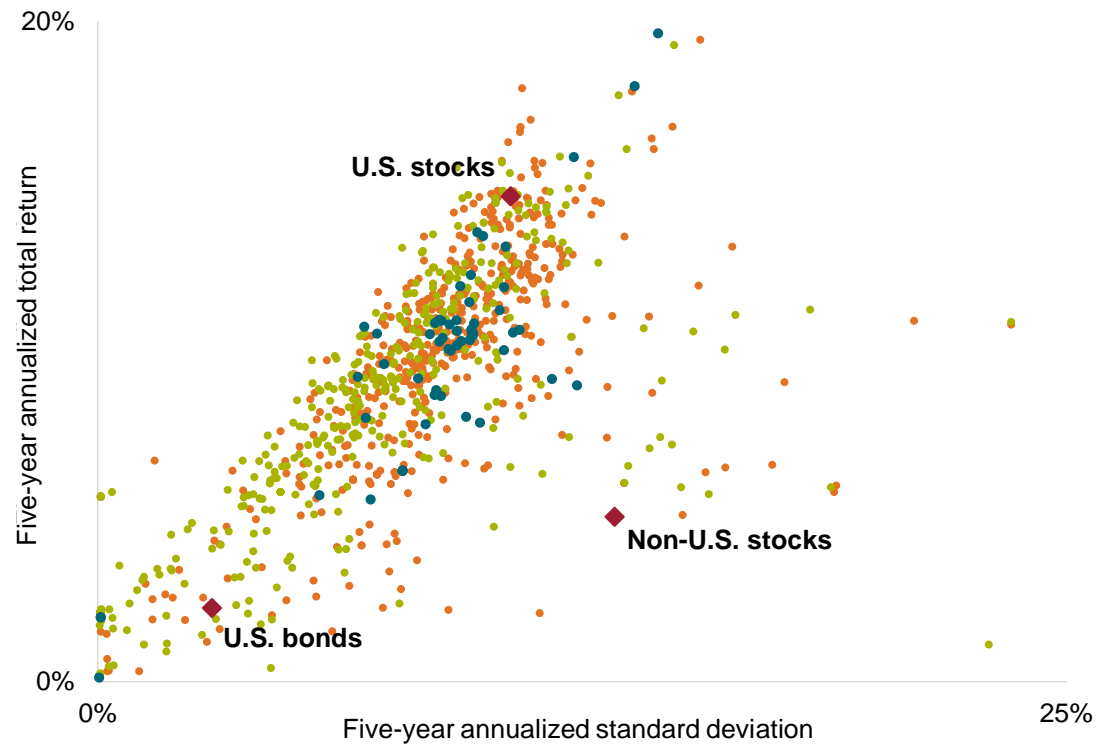
... investors do not withdraw money after rolling over until around age 72



Source: Retirement distribution decisions among DC participants, Vanguard, October 2016.

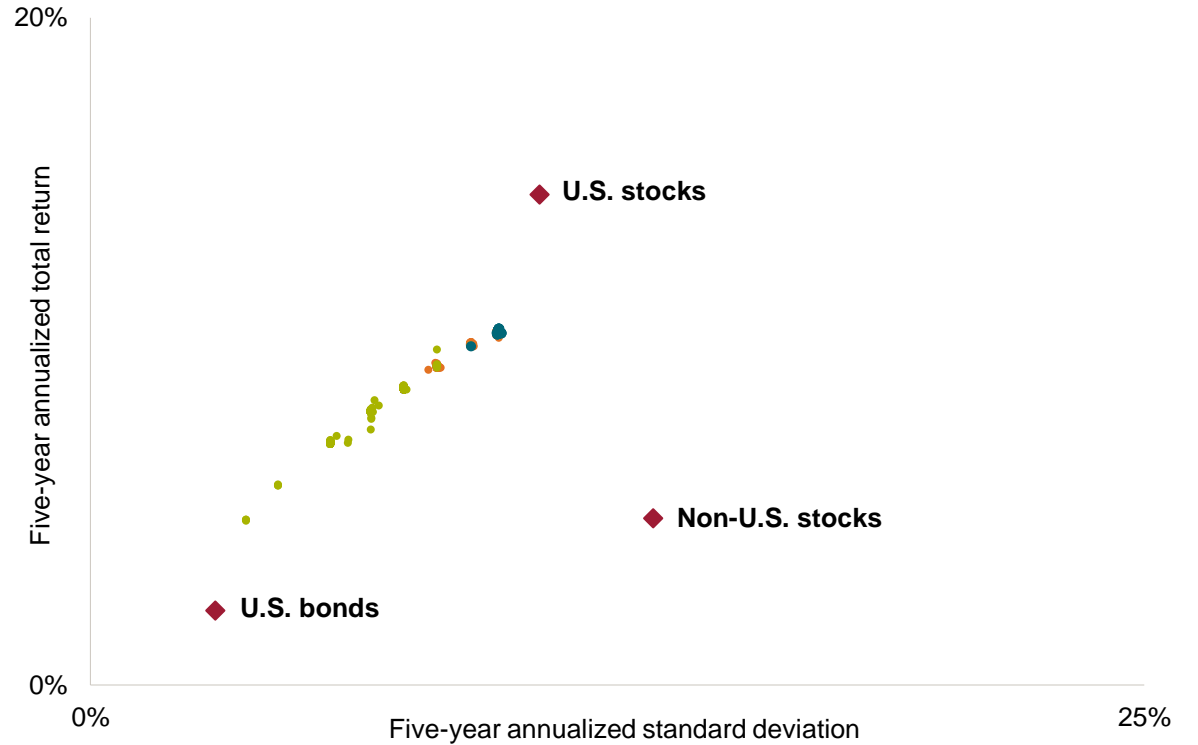
# Reminding ourselves why TDFs exist in the first place

## Left to their own devices, many investors arrive at extreme asset allocations



- Participants younger than 35 years of age
- Participants ages 35 to 55
- Participants older than 55 years of age

## TDFs enable average investors to benefit from more efficient risk-return trade-offs



**Past performance is not a guarantee of future results.**

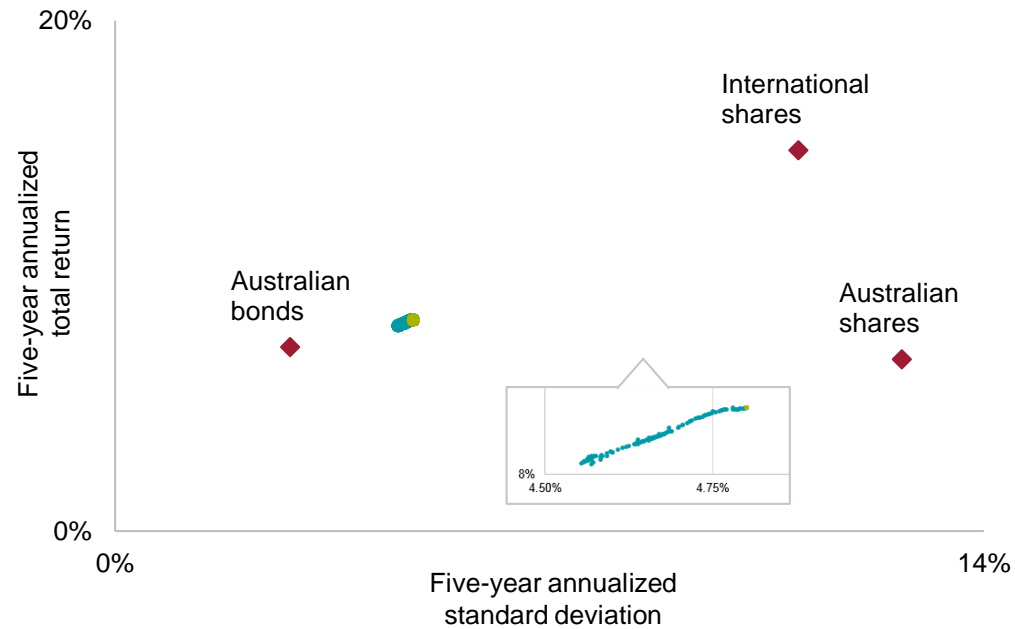
Source: Vanguard, How America Saves 2017.

Note: Includes a random sample of 1,000 participant accounts drawn from respective samples. Excludes 0.5% top and 0.5% bottom outliers for both risk and return, for a net sample of 980 observations. Vanguard defined contribution plan participants for the five-year period ended December 31, 2016.

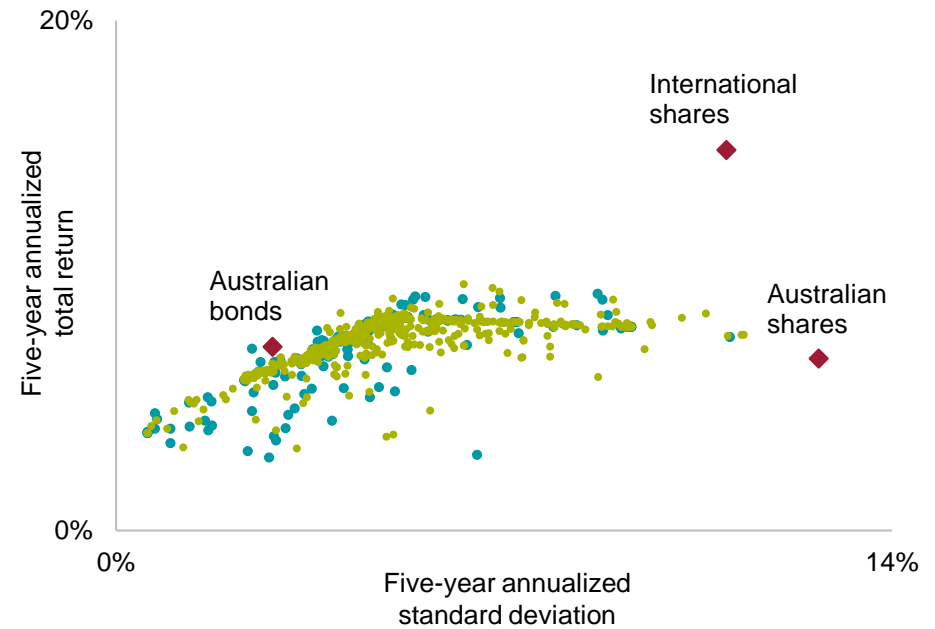
Note: U.S. stocks represented by the MSCI US Broad Market Index; U.S. bonds represented by the Barclays U.S. Aggregate Bond Index; International stocks represented by the MSCI All Country World Index ex USA.

## A similar story can be seen in Australia's superannuation system

Life-cycle members...



Self-directed members...



- Members age <55
- Members age 55+

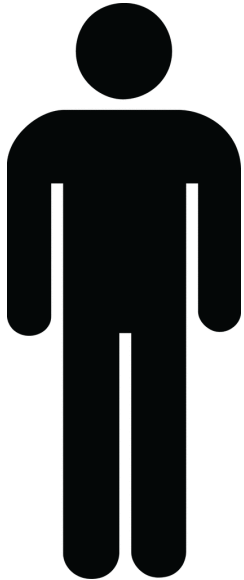
**Past performance is not a guarantee of future results.**

Source: *How Australia Saves 2017*, Vanguard.

Note: Australian shares represented by the S&P/ASX 300 Index; Australian bonds represented by the Bloomberg AusBond Composite 0+ Yr Index; international shares represented by the MSCI World ex-Australia Index. a random sample of 1,000 participant accounts drawn from respective samples. Excludes 0.5% top and 0.5% bottom outliers for both risk and return, for a net sample of 980 observations. SunSuper members for the five-year period ended June 30, 2016.

## What my TDF knows about me....

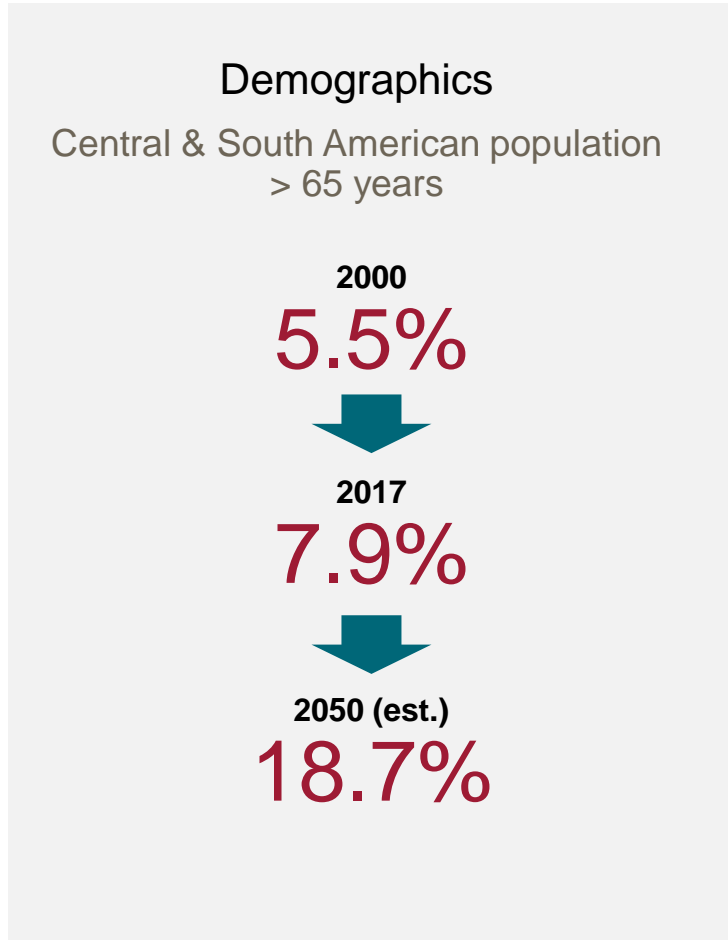
Personal Identification Number: XXXXX  
Expected retirement: ~ 2045



# Solving the decumulation riddle – a global quest



## What's fueling the urgency around "retirement income" and "decumulation"?

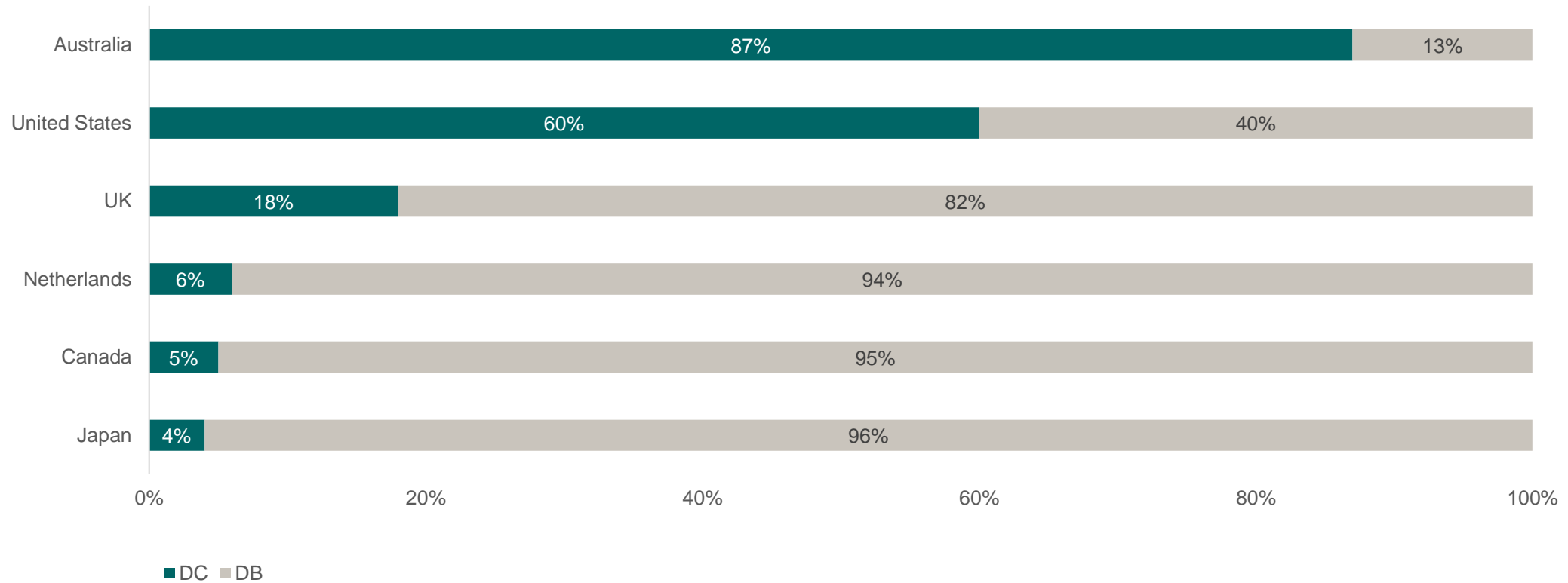


Sources: U.S. Census Bureau, World Health Organization, historical returns computed by Vanguard, expected returns are estimated using the Vanguard Capital Markets Model (VCMM).

**IMPORTANT: The projections or other information generated by Vanguard Capital Markets Model® (VCMM) regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Results may vary with each use and over time. Please see the Important information slide for additional information about VCMM.**

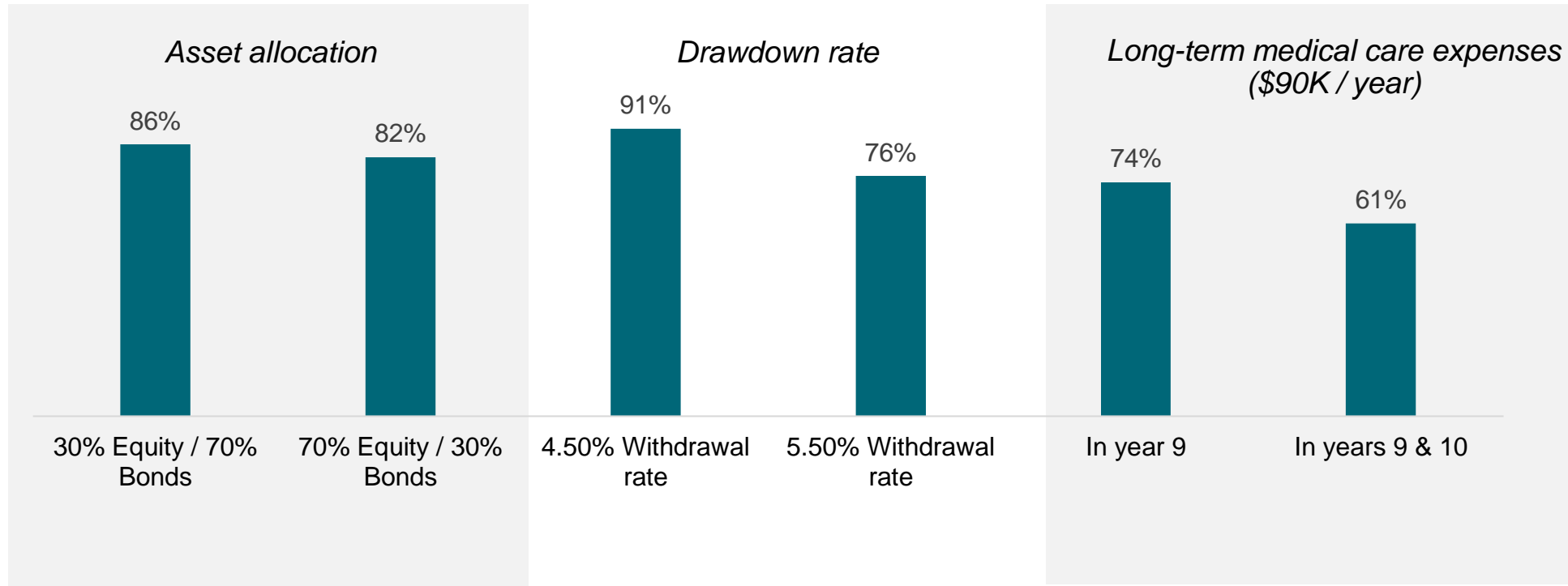
## Access to guaranteed income in retirement is declining (or in many markets, never existed)

Share of defined contribution versus defined benefit assets across major markets



## What factors determine success in decumulation?

*Impact on success in year 35 of retirement from changes to the...*



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Notes: Salary projections are derived from the Social Security Administration's Wage Index, an index that accounts for factors like career advancement. The index is grown by 1.1% annually, on a real basis, which is representative of the U.S. economy's historical productivity growth. Age-specific contribution rates are derived from *How America Saves 2014* (The Vanguard Group, 2014), a report surveying 3 million participants served by Vanguard's recordkeeping business. Contributions are assumed to start at an average rate of 4.88% at age 25, increasing to an average rate of 9.98% by age 64. Over the employee's career, the average contribution rate is 7.2%. We assume a company match of \$0.50 on the dollar up to 3%, which is consistent with industry averages. Replacement ratios are drawn from the work of Aon Consulting (with data taken from the U.S. Department of Labor's Bureau of Labor Statistics "Consumer Expenditure Survey") to assign appropriate replacement ratios based on retirees' age-65 income.

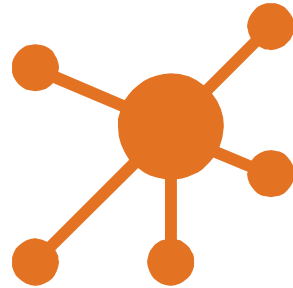
Focusing on the things you can  
actually control

## Vanguard's mission: to take a stand for all investors, to treat them fairly, and to give them the best chance for investment success

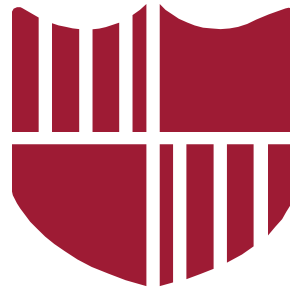
This mission anchors the design principles of the Vanguard Target Retirement Funds & Trusts:



Build **enduring**  
investment  
portfolios

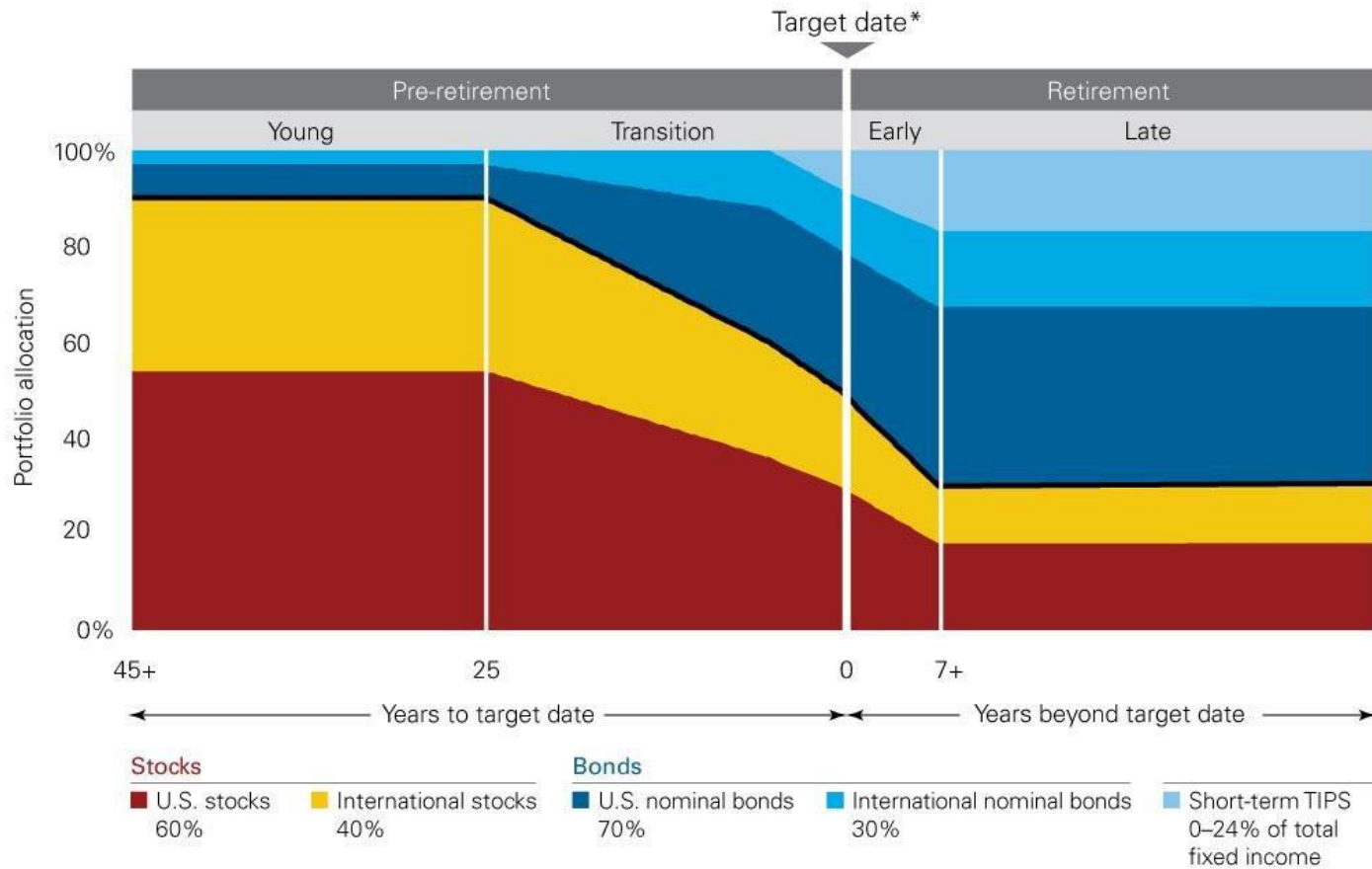


Help investors reach  
their goals through  
a **holistic** approach



Deliver a **defendable**  
solution that is  
globally diversified,  
transparent, and low  
cost

## Transparent, straightforward asset-class exposure

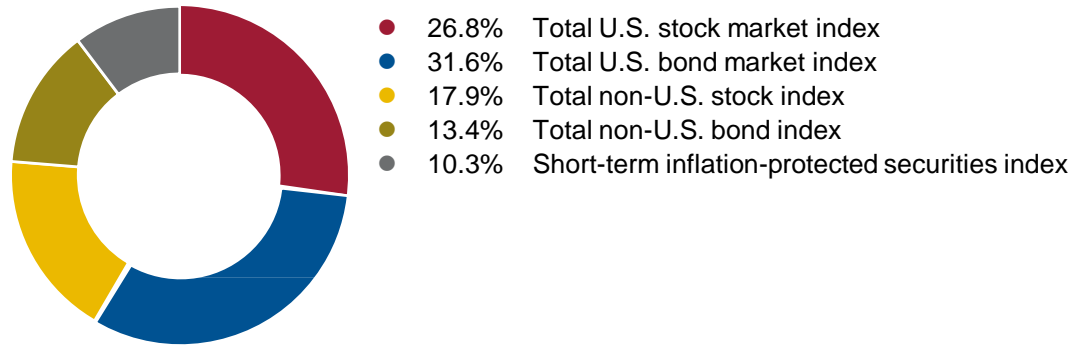


Source: Vanguard.

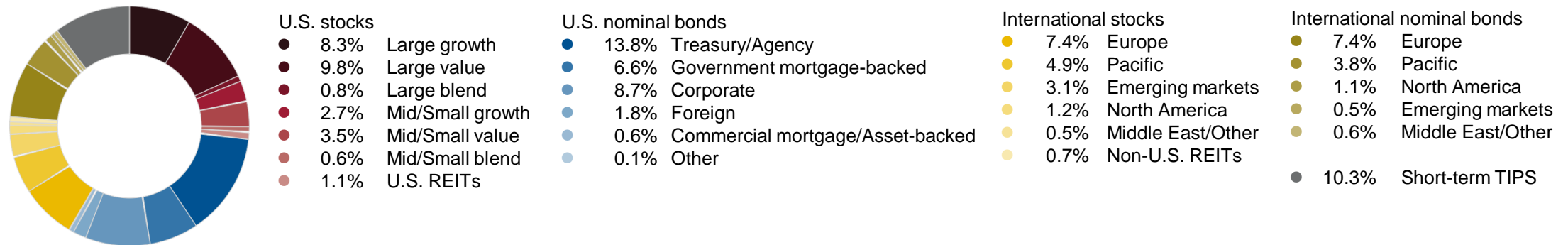
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## Two different lenses to portfolio construction

### Fewer moving parts—5 index funds



### Many moving parts—25+ sub-asset classes



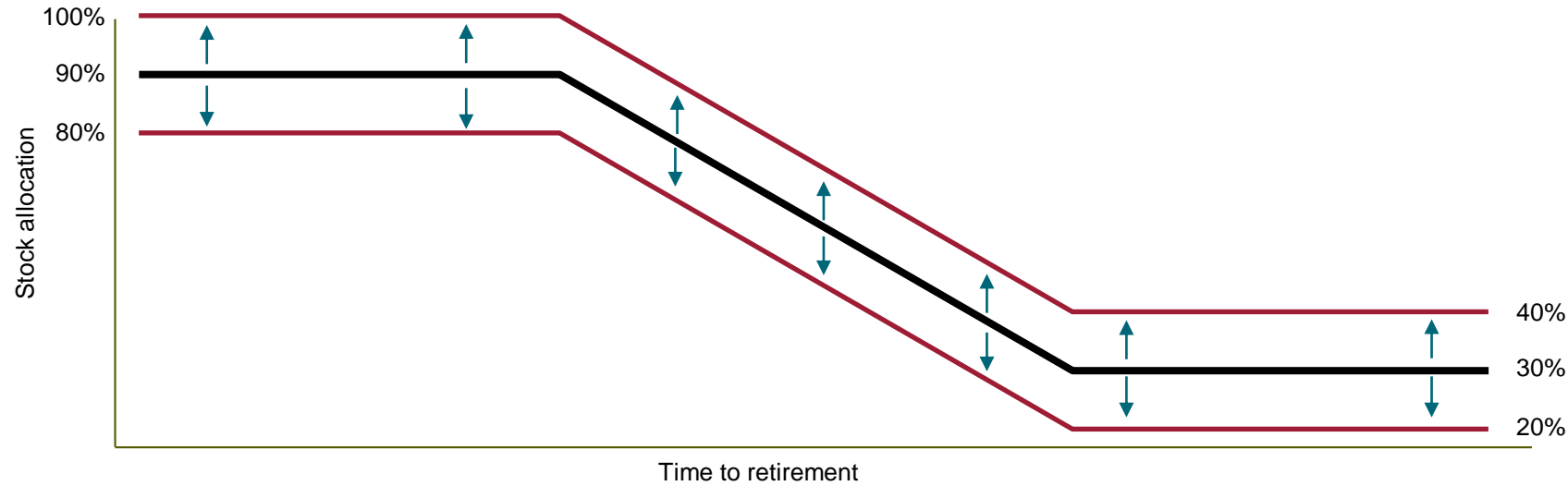
Vanguard target-date funds offer the simplicity of an index-oriented, well-diversified portfolio that is strategic and straightforward in its approach. The funds are composed of up to five underlying funds and follow an easy-to-understand asset allocation glide path. Underlying this simplicity is Vanguard's deep investment expertise, knowledge of the capital markets, and insights into participant behavior.

Sources: Hypothetical target asset allocations per the glide path of a 2015 target-date fund. Sub-asset allocations determined using data from Vanguard and Morningstar as of March 31, 2017.

You can never invest your way out of a savings deficit



## Meaningful changes in glide path design only have a marginal impact on success in decumulation...



Probability of positive balance at age 95

“Conservative” glide path

Baseline glide path

“Aggressive” glide path

**91%**

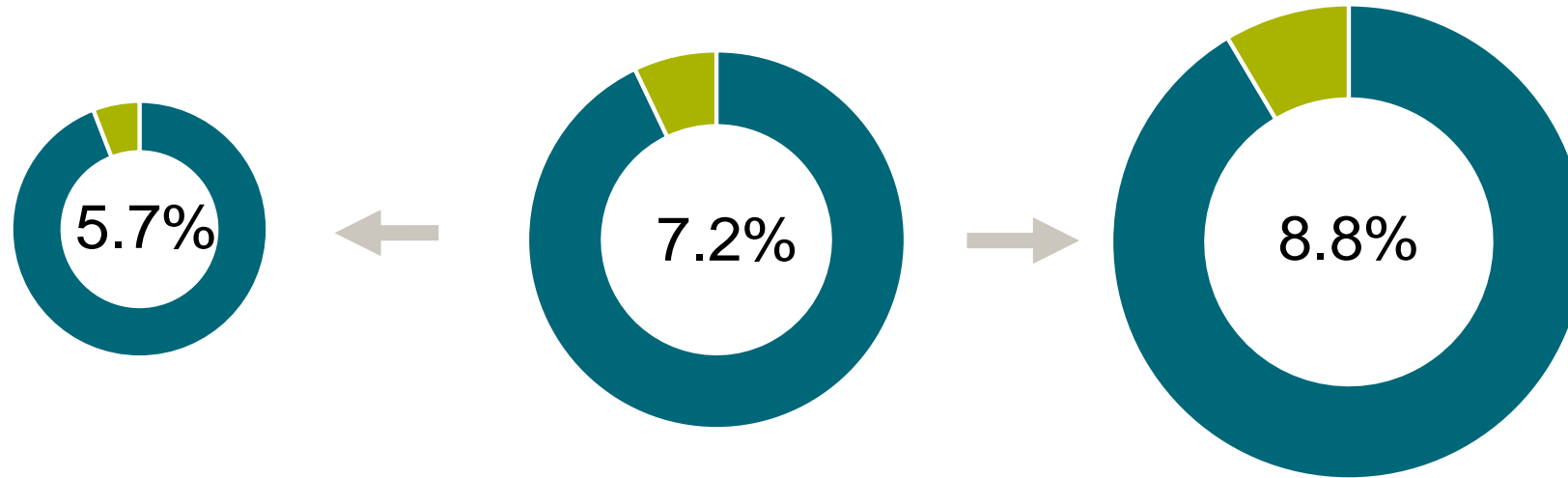
**92%**

**92%**

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...however, there is much greater power in the savings rate



Probability of positive balance at age 95

Reduced savings rate

Baseline savings rate

Increased savings rate

**86%**

**92%**

**95%**

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## Important information

**The information contained herein is for educational purposes only and does not constitute an offer or solicitation and may not be treated as an offer or solicitation in any jurisdiction where such an offer or solicitation is against the law, or to anyone to whom it is unlawful to make such an offer or solicitation, or if the person making the offer or solicitation is not qualified to do so.**

All investing is subject to risk, including the possible loss of the money you invest. Investments in target-date funds are subject to the risks of their underlying funds. The year in the fund name refers to the approximate year (the target date) when an investor in the fund would retire and leave the work force. The fund will gradually shift its emphasis from more aggressive investments to more conservative ones based on its target date. An investment in the target-date fund is not guaranteed at any time, including on or after the target date.

**IMPORTANT: The projections and other information generated by the Vanguard Capital Markets Model regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. VCMM results will vary with each use and over time.**

The VCMM projections are based on a statistical analysis of historical data. Future returns may behave differently from the historical patterns captured in the VCMM. More important, the VCMM may be underestimating extreme negative scenarios unobserved in the historical period on which the model estimation is based.

The Vanguard Capital Markets Model® is a proprietary financial simulation tool developed and maintained by Vanguard's primary investment research and advice teams. The model forecasts distributions of future returns for a wide array of broad asset classes. Those asset classes include U.S. and international equity markets, several maturities of the U.S. Treasury and corporate fixed income markets, international fixed income markets, U.S. money markets, commodities, and certain alternative investment strategies. The theoretical and empirical foundation for the Vanguard Capital Markets Model is that the returns of various asset classes reflect the compensation investors require for bearing different types of systematic risk (beta). At the core of the model are estimates of the dynamic statistical relationship between risk factors and asset returns, obtained from statistical analysis based on available monthly financial and economic data from as early as 1960. Using a system of estimated equations, the model then applies a Monte Carlo simulation method to project the estimated interrelationships among risk factors and asset classes as well as uncertainty and randomness over time. The model generates a large set of simulated outcomes for each asset class over several time horizons. Forecasts are obtained by computing measures of central tendency in these simulations. Results produced by the tool will vary with each use and over time.

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