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The meaning of life: A framework for determining basic life insurance needs

Life insurance is critical to the overall stability of a financial plan, yet a topic few want to address. Recent research has shown that despite 70% of American adults saying they have a need for it, just over half own life insurance of any kind.[1] While investors often overlook it, it's important to assess your life insurance needs to ensure that loved ones are appropriately taken care of in the event of an untimely passing.

Prioritize your insurable needs.

In addition to funeral costs and final expenses, insurable needs tend to fall into one of three categories: providing ongoing support to financial dependents (such as spouse, children, or parents), paying off outstanding debts, and immediately funding long-term goals. Quantifying the needs for each category and prioritizing based on personal preference will help structure an effective life insurance strategy.

Realize that life insurance needs evolve over time.

Most calculations take into consideration the need today but do not account for changes (either up or down) over the years to come. This commonly creates a mismatch of coverage when a long-term solution leads to over-coverage in later years, resulting in unnecessary premiums.

Understand the possible mix of coverage.

Investors and advisors should understand the pros and cons of various options and how they fit into a life insurance strategy. We believe that most investors require just term coverage for their personal needs. A mixture of group coverage for shorter-term obligations and individual coverage for longer-term support could be optimal.

1 Source: Wood, Leyes, and Scanlon (2021).

Introduction

A recent study conducted by the Life Insurance Marketing and Research Association found that while 7 in 10 American adults acknowledged a need for it, only 52% had life insurance of any type. The study cites several reasons why people remain uninsured, but of particular interest was that 81% of uninsured respondents believed it was too expensive, and 65% were unsure how much (and what type) they needed for their specific situation.

Optimal life insurance planning should focus on obtaining sufficient coverage for your present (and future) needs from reliable providers at a cost-effective price.

Both concerns are reasonable. While not having adequate coverage could create dire financial consequences for those who suffer the worst-case scenario, having excessive levels of protection creates a drain on resources that could be put to more effective use. Optimal life insurance planning should focus on obtaining sufficient coverage for your present (and future) needs from reliable providers at a cost-effective price.

In this paper, we focus on the rare yet catastrophic impact that a premature death can have on households and the importance of effectively mitigating this risk. To achieve this goal, it is important to consider the whole picture during each step of the life insurance planning process. From assessing and prioritizing insurable needs, to understanding how those needs will evolve over time, to finally choosing a policy or policies to fit them require many considerations along the way.

We start by assessing the initial coverage needs of members of a hypothetical household, project how those needs are expected to change over time, and provide potential solutions that satisfy the group's current and future selves. This approach could save thousands of dollars in excess premiums while minimizing the chance that coverage falls short when it is needed the most.

Life insurance case study: Steven and Sarah Sample

Steve (37, M) is a science teacher at the local high school, making $75,000 a year. He is married to Sarah (37, F), who also makes $75,000 a year as a market research analyst. They have a ten-year-old named Sam and do not plan to have more children in the future.

They have been diligent savers for their entire careers, having set aside $150,000 for retirement already and saving $22,500 each year. In addition, they have $30,000 saved for Sam's college expenses and earmark another $6,000 each year for this purpose.

Steve and Sarah meet with their financial planner to discuss some recent changes in their financial lives and ensure they are still on track for their goals. Based on their situation, they are in excellent shape, with a 99% chance of meeting their retirement goal. However, their planner explains how a premature passing could leave them in a perilous situation, as the surviving spouse would deplete their nest egg replacing the deceased spouse's income within a few years.

While the chances of either Sarah or Steve passing away is remote, they realize how life insurance would protect the survivor if the unfortunate were to happen. Both of them would like to keep things just the way they are for Sam's benefit and plan to continue working if something happened to their spouse. If something did happen to either of them, their main objectives are the following:

- Pay off the remaining mortgage, which is their only debt ($290,000 balance at 4% APR, 300 months remaining).
- Ensure the survivor's baseline retirement target of $1,800,000 saved by age 62 is met.
- Provide for Sam's ongoing support until college ($500 a month in addition to Social Security survivor benefits until age 18).
- Ensure Sam's college education goal of $100,000 saved in eight years is fully funded.
- Even though Steve and Sarah each feel their respective take-home pay could cover ongoing expenses if all other needs were met, they would each like to have a buffer of an additional $6,000 per year until retirement if one were to pass away.

How much insurance do you need?

The first step is to determine what the life insurance is for and how much would be required to cover those needs. A common measure used in the industry is the "income multiple" approach, which states that 10x–15x income is an appropriate level of coverage for most people. This can be a useful beginning, but like all heuristics, it can have a few shortcomings:

- It uses gross income as a starting point. This includes federal, state, and payroll taxes that do not need to be a part of the life insurance calculation.
- It takes no consideration of the surviving spouse's actual need. Spouses with ample income or assets might not need to rely on their partner's income to maintain their lifestyle.
- It does not consider differences in an investor's life cycle. For example, a 47-year-old nearing the peak of their lifetime earnings would have a much higher income multiple than a 27-year-old getting started. However, the 27-year-old might have more needs relative to income if they have younger children, more years remaining on a mortgage, or less saved for the future.

The 10x–15x income level is an appropriate starting point for most people, but like all heuristics, it can have a few shortcomings.

Most insurable needs fall into one of four categories, as shown in **Figure 1**: paying for final expenses, supporting ongoing dependent needs, paying off obligations, and immediately funding future goals. Using this framework, families can assess which needs apply to their situation and determine how much money would be required to support them. By looking at these categories, households can get a better sense of both the need and duration of various expenses that must be replaced.

FIGURE 1.

The need for life insurance comes in many forms

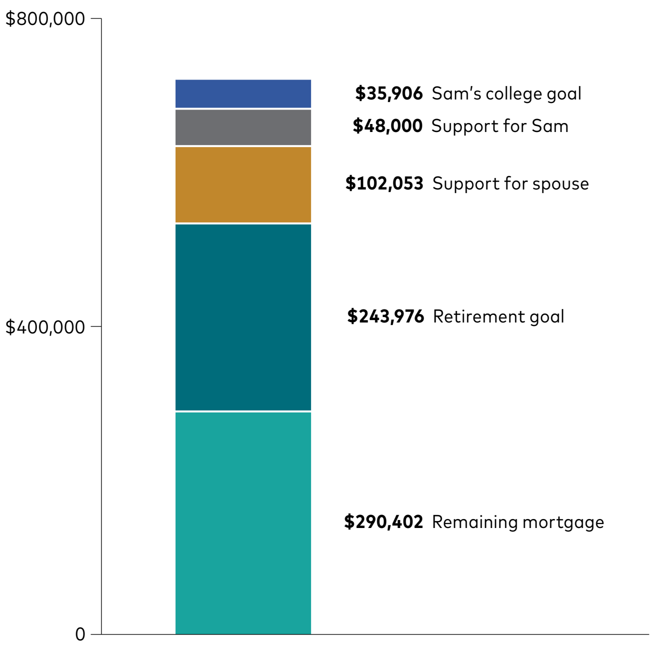
Category	Description
1 **Funeral costs**	In 2022, the average funeral costs in the United States were \$8,750.* While these costs remain in place for life, they can be covered out-of-pocket if the deceased has sufficient resources.
2 **Dependent support**	This includes providing for the ongoing support of spouses, partners, and minor children. Support for spouses is the estimated shortfall between the survivor's continued take-home pay and ongoing expenses to support their well-being. Support for minor children is the ongoing need not covered by other benefits.
3 **Paying off debt**	Not all debts need to be covered by life insurance, as some might be discharged at death of the debtor. Some might be eliminated by personal choice, such as a surviving spouse who intends to downsize or relocate after their spouse passes.
4 **Funding goals**	Typical long-term obligations would be college education for children or retirement for a surviving spouse. Immediately funding long-term goals provides greater potential for growth over time (although this might not be as pressing a need for a surviving spouse).

* Source: Gambhir and Shih (2022).

Using this approach as a framework for Sarah and Steve, we find they each would need $720,337 of protection if either spouse passed away today (**Figure 2** provides an overview of each category). To help make sure any unexpected items are captured and to provide a cushion, they might choose to round their coverage to $800,000 and, given the longer-term nature of their larger obligations, might opt for a 25-year life insurance policy. However, needs today aren't the same as needs tomorrow, as we'll see in the next section.

FIGURE 2.

Breakdown of projected immediate needs for Steve and Sarah



Notes: The current retirement goal shortfall is determined by the lump sum needed today to supplement the current balance of $150,000 to meet the $1,800,000 future value target in 25 years with no additional contributions to a static 60/40 portfolio. The current college goal shortfall is determined by the lump sum needed today to meet the $100,000 future value target in eight years with no additional contributions to a static 50/50 portfolio. Dependent support for the surviving spouse is determined by the lump sum needed today to provide inflation-adjusted payments of $6,000 per year for 25 years, with the proceeds invested in a static 40/60 portfolio. Dependent support for Sam is the cumulative remaining payments of $6,000 until age 18 with a real growth rate of 0%. Annualized return assumptions for retirement, college, and surviving spouse support are all based on median return paths for the respective stock/bond allocations using VCMM initial-state projections. Median return projections are based over a 25-year period for retirement and spousal support and over a 10-year period for education. Target stock/bond allocations are for illustrative purposes only and are not intended to serve as a recommendation for any specific situation.

Source: Vanguard.

IMPORTANT: The projections and other information generated by the Vanguard Capital Market 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. Distribution of return outcomes from VCMM are derived from 10,000 simulations for each modeled asset class. Simulations as of June 30, 2022. Results from the model may vary with each use and over time. For more information, please see Appendix 1.

Social Security to the rescue

One often-overlooked income source is Social Security benefits for eligible dependents. A spouse (or ex-spouse) caring for a child of the deceased under the age of 16 and any children of the deceased under the age of 18 (up to age 19 if enrolled in a secondary school) can receive up to 75% of the accrued Social Security benefits of the deceased. Even a parent who is financially dependent on their adult children could be eligible to receive a survivor's benefit should the unfortunate occur.[2]

These survivor benefits are subject to a family maximum benefit threshold of 150%—188% of the deceased's primary insurance amount—and could be reduced (or phased out entirely) based on the recipient's earned income. Families with more eligible dependents or a working spouse might not receive as much support from Social Security as a smaller family and will likely have a greater need for life insurance to cover ongoing support.

2 A single surviving parent who was financially dependent on their deceased child could receive 82.5% of the deceased worker's primary insurance amount (PIA). If there are two surviving parents, each would be eligible for 75% of the deceased worker's PIA.

How life insurance needs evolve over time

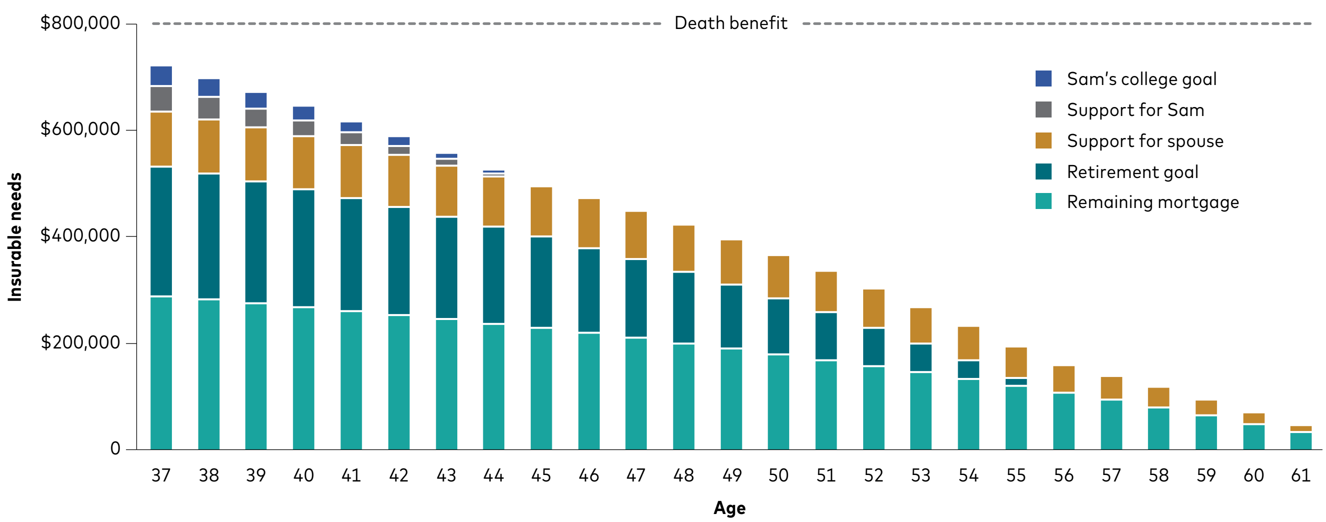
Since an unexpected passing can happen at any time, most life insurance assessments focus on a family's immediate needs. However, it is also important to consider how needs will change over time. Every year a family doesn't claim a life insurance benefit is another year of income earned, support provided, debts paid, savings deposited, and investments grown, all of which serve to reduce the need for insurance over time.

Figure 3a shows how Sarah and Steve's needs decline as the years pass, and **Figure 3b** shows the likelihood of one of them passing away at various points of their working years. While their initial need is just under $725,000 to pay off the mortgage, fund long-term goals, and provide additional support for both Sam and the surviving spouse, the shortfall declines as progress is made over time. In five years, the projected insurable need drops by nearly 20%, and by age 50, the amount needed is just over half the initial target.

FIGURE 3.

How the need for life insurance evolves over time

a. Sarah and Steve's life insurance needs by category



Notes: The retirement goal shortfall is determined by the lump sum needed each year to meet the $1,800,000 future value target by age 62 with $22,500 in annual contributions to a static 60/40 portfolio. The college goal shortfall is determined by the lump sum needed each year to meet the $100,000 future value target by age 45 with $6,000 in annual contributions to a static 50/50 portfolio. Dependent support for the surviving spouse is determined by the lump sum needed each year to provide inflation-adjusted payments of $6,000 per year until Year 25, with the proceeds invested in a static 40/60 portfolio. Dependent support for Sam is the cumulative remaining payments of $6,000 until age 18 with a real growth rate of 0%. Annualized return assumptions for retirement, college, and surviving spouse support are all based on median return paths for the respective stock/bond allocations using VCMM initial-state projections. Median return projections are based over a 25-year period for retirement and spousal support and over a 10-year period for education. Target stock/bond allocations are for illustrative purposes only and are not intended to serve as a recommendation for any specific situation.

Source: Vanguard.

b. Age-based likelihood of passing and remaining need for Sarah and Steve

Age	Likelihood of passing: Steve	Sarah	Either	Remaining need
40 years old	1 in 538	1 in 936	1 in 342	$643,549
45 years old	1 in 181	1 in 292	1 in 112	$493,651
50 years old	1 in 92	1 in 142	1 in 56	$364,159
55 years old	1 in 53	1 in 80	1 in 32	$191,551
60 years old	1 in 31	1 in 49	1 in 19	$69,012

Note: Likelihood of passing refers to the actuarial probability that a male, female, or either spouse (one male, one female), currently 37 years old and in excellent health, would pass away at or before the ages shown in the first column.

Source: Vanguard calculations, based on data from the Society of Actuaries mortality tables.

While the slope and magnitude vary for each situation, the overall premise is clear: Optimal life insurance planning should focus on obtaining sufficient coverage for your present (and future) needs through reliable providers at a cost-effective price. The latter part is crucial, as buying too much insurance could jeopardize current financial stability. Trade-offs must be considered if premiums are so high that they reduce the ability to meet ongoing needs, establish an emergency fund, or effectively save toward long-term goals. In these cases, households should review their situation and decide which needs at what points cannot be sacrificed and which can be adjusted or effectively addressed in the aftermath of a premature passing. The risks that cannot be compromised should remain insured and the rest addressed through other methods.

How to get the right kind of coverage

The next step is obtaining the proper coverage in the most effective manner. In doing so, households should look to answer a few questions:

1. How long will I need the coverage in place (term versus permanent coverage)?
2. Where should I go to obtain the coverage (group versus personal coverage)?
3. What should I consider when evaluating insurance providers?
4. When considering a "cushion" of coverage, is it better to have a higher payout or a longer term ("erring up" versus "erring out")?
5. Should I purchase one policy or use multiple policies (one policy versus laddering)?

Because most insurable needs are temporary, Vanguard believes that most households should look to term insurance for their personal life insurance needs.

Term versus permanent

Because most insurable needs when hedging against a premature death are temporary, Vanguard believes that most households should look to term insurance for their personal life insurance needs. This can help keep premiums to a minimum, allowing additional resources to be invested more effectively toward other financial goals and obligations.

In some situations, a permanent need for insurance exists, but these tend to be unique circumstances that the average investor will not experience.[3] For example, funding an irrevocable trust to provide liquidity for estate taxes or to support a loved one with special needs might best be served with permanent life insurance, as these conditions are likely to last well beyond a specific term.

Group versus personal

Many employers offer life insurance as a benefit. Typically, it is offered as both basic coverage (usually a multiple of income at no charge or heavily subsidized by the employer)[4] and supplemental coverage (when the worker can purchase additional life insurance at a premium linked to their current age).

3 According to the 2019 IRS *Statistics of Income*, 157,796,807 personal tax returns were filed, but only 2,570 filed an estate tax return when taxes were owed—an approximately 60,000:1 ratio.

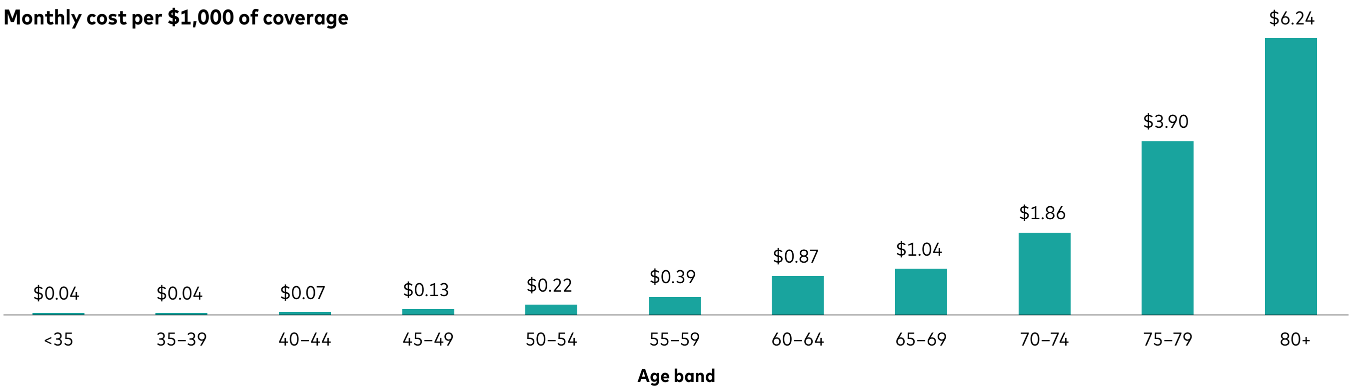
4 The IRS excludes premiums for the first $50,000 of group term life insurance provided by an employer. Premiums over $50,000 covered by the employer are considered a fringe benefit and included in the worker's taxable income for the year.

While supplemental group coverage tends to be cheaper upfront, these premiums are not set like most individual policies. As an example, **Figure 4a** shows the age-based premiums for each $1,000 of supplemental life insurance offered to federal employees. Since supplemental group coverage increases as the insured reaches new age bands, what starts out as a cheaper option can become very costly over an entire career, as evidenced in **Figure 4b**.

FIGURE 4.

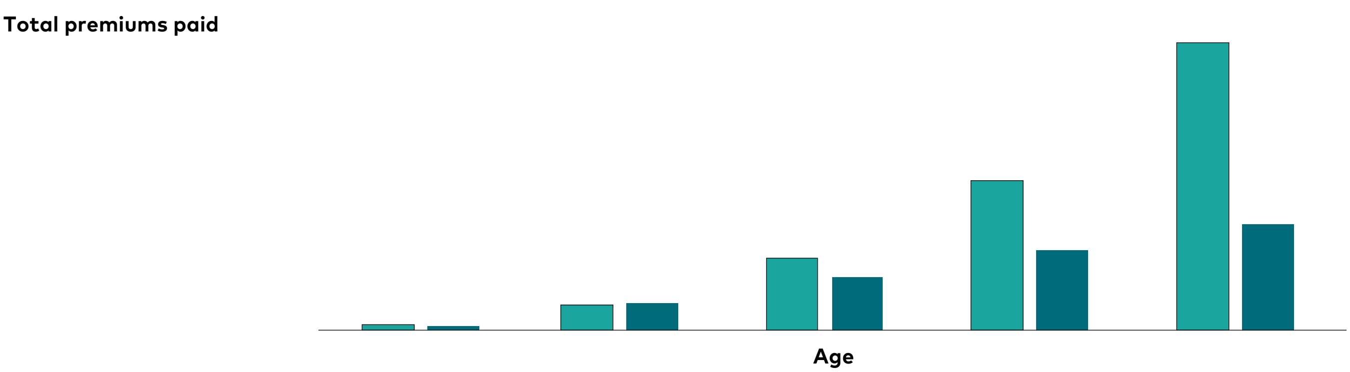
Group insurance starts out cheaper but can become more costly over time

a. Cost of $1,000 group insurance, by age bands



Source: Vanguard, based on data from the Federal Employees' Group Life Insurance Program (FEGLI) as of October 1, 2021.

b. Cumulative insurance costs for a 40-year-old male, group term versus personal term insurance



	40	44	49	54	59
Group insurance	$420	$2,100	$6,000	$12,600	$24,300
Individual insurance	$449	$2,246	$4,492	$6,737	$8,983

Source: Vanguard, based on data from Quotacy as of October 20, 2022.

Notes: The data in this figure compare $500,000 of 20-year coverage. Group life insurance premiums are based on age bands and cost per $1,000 from Figure 4a. Individual life insurance premiums are based on a 40-year-old male in Arizona with no medications or family history, using median height and weight figures for age and gender. Monthly premiums for individual coverage are based on the average of the least expensive and most expensive quotes received.

Just like the term-versus-permanent decision, in some situations, group coverage might be the better choice. Group policies tend to have more relaxed underwriting standards, which could make them more affordable for those with health risks. Even for healthier employees, supplemental group coverage could be an excellent choice for needs not expected to last beyond a handful of years.[5]

Analyzing insurance providers

Two main considerations when choosing to purchase a policy are the costs of the premiums and the financial strength of the selected insurer, which can be determined by independent ratings.

The most common consideration is the cost of coverage. Even though the death benefit might be the same between two offers, premiums can vary because of underwriting differences or product options. When deciding between multiple offerings, you should consider the differences between policy features and whether they make sense for your situation.[6]

Since any guarantees made by the insurance provider are subject to its ability to make good on those claims, it is important to look for companies that are unlikely to go bankrupt and potentially be at risk of not paying out future claims.[7] Independent ratings agencies such as A.M. Best, Fitch, and Moody's rate the financial strength of insurance companies for consumers and other interested parties. Because the rating scales vary, it is good practice to check with two or more agencies to ensure that the company is generally highly rated.

Many organizations also provide information on customer satisfaction with an insurance company regarding claims filed, policy cancelations, payout processing time, and other factors. A provider's lower policy costs might come with the hassle of being more difficult to work with if a claim is ever filed.

Independent ratings agencies can provide insight into the financial strength of insurance companies. This can help individuals determine whether a provider will likely be able to make good on future claims.

5 Another consideration is the worker's intent to remain at the company. Barring a portability option, group coverage could be lost if the worker were to leave.

6 In this case, policy features can either be optional riders, such as a waiver of premiums, or structural differences, such as the ability to convert from term to permanent coverage or greater frequency in stepping down coverage.

7 Historically, some life insurance companies have gone out of business. However, some state-level protections are in place that aim to mitigate the impact to policyholders by taking over policies or facilitating their transfer to another company.

Erring up versus erring out

Like many aspects of financial planning, life insurance planning is far from an exercise in precision. Because needs, preferences, and available support change frequently, it might be prudent to include an additional cushion of coverage in a needs analysis.

Households can hedge their life insurance needs in two ways: They can err up by increasing the immediate benefit or err out by slightly extending the initial coverage term. Families might consider erring up if they feel their situation requires more coverage in the near term, such as planning for a new child or purchasing or upgrading a home. Conversely, they might wish to err out by purchasing term coverage with longer horizons if they are concerned about obligations lasting longer than originally intended.

Because needs, preferences, and available support change frequently, it might be prudent to include an additional cushion of coverage in a needs analysis.

Single policy versus laddering

Most households that purchase life insurance typically do so with a singular view: to have one policy providing constant coverage over the insurable horizon. An alternative to this approach, known as laddering, incorporates multiple policies of varying benefits and lengths to match the evolution of insurance needs more closely. This allows the policies to fade out as coverage is no longer necessary, which can result in lower lifetime premiums.

Putting it all together

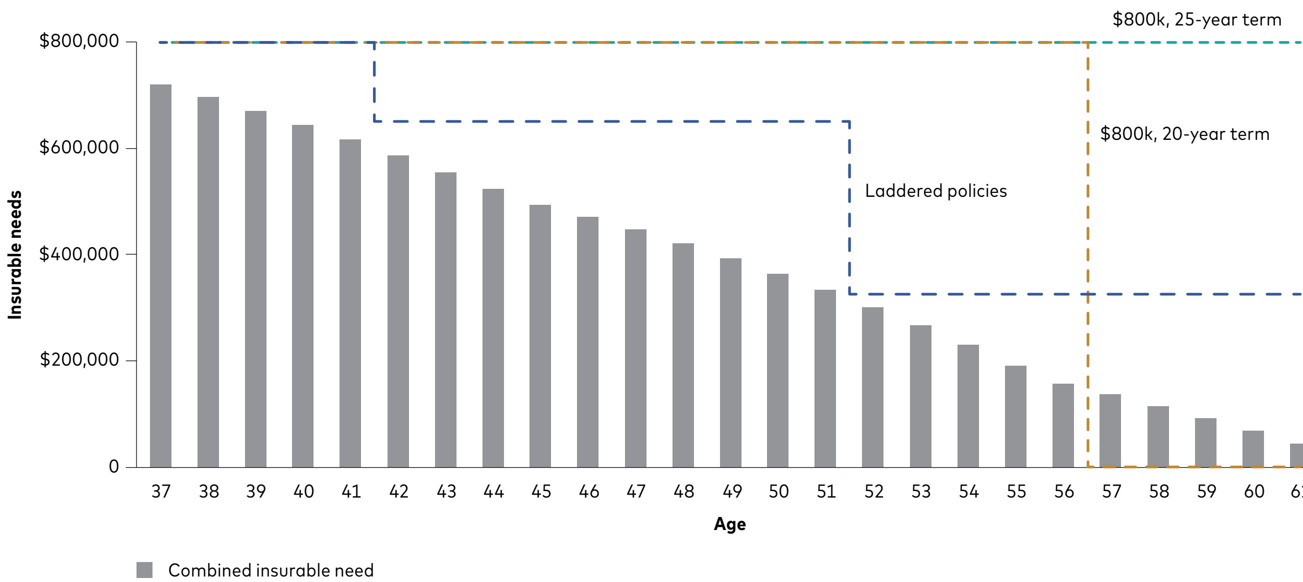
Throughout this paper, we have used the example of Sarah and Steve to convey the importance of segmenting types of insurable needs, illustrate the evolution of these needs, and highlight the different ways the couple could obtain coverage. The question now is: What should they do?

Figure 5 highlights three possible solutions: They can purchase an $800,000 policy for 20 years, purchase an $800,000 policy for 25 years, or pursue a laddering strategy.[8]

FIGURE 5.

Using a laddered approach to step down coverage over time

a. Evolution of Sarah and Steve's life insurance needs over time and various options



Notes: The retirement goal shortfall is determined by the lump sum needed each year to supplement the current balance of $150,000 to meet the $1,800,000 future value target by age 62 with $22,500 in annual contributions to a static 60/40 portfolio. The college goal shortfall is determined by the lump sum needed each year to meet the $100,000 future value target by age 45 with $6,000 in annual contributions to a static 50/50 portfolio. Dependent support for the surviving spouse is determined by the lump sum needed each year to provide inflation-adjusted payments of $6,000 per year until Year 25, with the proceeds invested in a static 40/60 portfolio. Dependent support for Sam is the cumulative remaining payments of $6,000 until age 18 with a real growth rate of 0%. Annualized return assumptions for retirement, college, and surviving spouse support are all based on median return paths for the respective stock/bond allocations using VCMM initial-state projections. Median return projections are based over a 25-year period for retirement and spousal support and over a 10-year period for education. Target stock/bond allocations are for illustrative purposes only and are not intended to serve as a recommendation for any specific situation.

Source: Vanguard.

8 For this example, we assume a $325,000, 15-year term policy; a $325,000, 25-year term policy; and $150,000 of group coverage for five years at the rates shown in Figure 4a. However, many combinations of laddered policies could make sense depending on factors such as health, acceptable trade-offs, and investor confidence.

b. Comparison of different solutions for Steve and Sarah

		20-year $800K term	25-year $800K term	Ladder approach
Benefits		Provides sufficient coverage for the bulk of the insurable term at a reasonable cost	Provides coverage over the entire insurable term and protects against potential increases in need	Provides coverage over the entire insurable term at a fraction of the cost of a larger 25-year policy
Drawbacks		Leaves family unprotected for final five years of its insurable term (unless policy is converted)	Costliest approach of the three, as premiums account for almost three decades of liability	Family is vulnerable to change in circumstances that could extend the need for insurance
Lifetime cost	Steve	$10,831	$21,094	$16,911
	Sarah	8,726	14,337	10,504
	Both	19,557	35,431	27,415
Present value	Steve	8,901	16,500	13,572
	Sarah	7,170	11,214	8,532
	Both	16,071	27,714	22,104

Notes: Premiums are based on the average of the least expensive and most expensive quotes received. Lifetime costs are estimated by multiplying the estimated annual premium by the number of years in the insured timespan. The present value of lifetime premiums discounts the annual premium associated with each year by the median inflation rate using VCMM initial-state projections. Quotes are based on a 37-year-old male and a 37-year-old female in Arizona with no medications or family history, using median height and weight figures for age and gender.

Source: Vanguard, based on data from the National Center for Health Statistics and Quotacy, as of September 22, 2022.

Almost immediately, it is apparent that one strategy doesn't make sense for them. Because most of their insurable needs fall off once Sam leaves home and they have saved enough to support the survivor's baseline retirement needs, the higher costs associated with a 25-year term policy for unnecessary coverage makes this a poor choice for Sarah and Steve. This leaves them with two viable options: They can purchase a 20-year policy for $800,000 or ladder multiple policies that start with $800,000 of coverage and decline at various points. Both approaches protect them at their most vulnerable points, with different benefits and drawbacks.

A laddering strategy for life insurance can be a "Goldilocks" approach, offering some level of coverage for a longer time at a lower overall cost.

- The 20-year policy provides more coverage for a longer period than the ladder approach at a lower cost. However, it leaves them with no coverage after Year 20. That might be okay with Steve and Sarah if they are willing to accept the risk associated with the remaining mortgage and retirement funding shortfall.
- The laddering strategy is something of a "Goldilocks" approach for Steve and Sarah, providing coverage beyond the 20-year period at a lower cost than the 25-year option. This is not without limitations, as it leaves them more vulnerable to an unforeseen event that increases the need for insurance past the point when the first policy is set to expire, such as having another child or an underperforming investment portfolio.[9]
- If Sarah and Steve wanted to keep costs lower, they could adjust the ladder by using a 20-year instead of a 25-year policy. While this would save money in lifetime premiums, it would also leave the surviving spouse with a deficit in the last five of their working years.

9 In our case study, we observed the potential change in insurable need if the assets earmarked for retirement, spousal support, and education performed in the 25th and 75th percentiles. Greater annualized returns produced an average insurable surplus of $65,000, whereas lower returns produced an average deficit of $120,000. While the laddering strategy absorbed the shortfall in most years, a client concerned with poor market performance might opt to extend the length of each term policy by five years.

Conclusion

While it doesn't get the attention of portfolio management and is rarely a conversation that families look forward to having, life insurance remains a critical aspect of a sound financial plan. Studies routinely show that respondents acknowledge the need for coverage but take no steps to address it, leaving themselves vulnerable to an unexpected passing.

Transferring the burden from low-probability but high-severity risks through insurance can help protect households from a catastrophic event at a very reasonable cost. To accomplish this, investors should focus on obtaining sufficient, cost-effective coverage for their present and evolving needs from reliable providers. Advisors can add tremendous value to the structuring of a life insurance strategy by helping households understand the different types of needs, how they change over time, and how to determine the most cost-efficient coverage.

No calculation perfectly quantifies a household's evolving needs, but these practices can establish a solid, cost-effective foundation. In fact, a well-structured life insurance plan can save tens of thousands of dollars for just a few minutes' time—a return that would please any investor!

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Appendix 1.

Asset returns: Vanguard Capital Markets Model
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 VCMM is a proprietary financial simulation tool developed and maintained by Vanguard's Investment Strategy Group. 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. 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. The asset-return distributions shown in this paper are drawn from 10,000 VCMM simulations based on market data and other information available as of June 30, 2022. The model uses index returns, without any fees or expenses, to represent asset classes. Taxes are not factored into the analysis. See the research paper Vanguard Global Capital Markets Model (Davis et al., 2014) for further details.

APPENDIX 2.

FIGURE A-1.
Side-by-side comparison of term versus permanent insurance

	Term life insurance	Permanent life insurance
Overview	Provides a death benefit during a set period of time for the policy	Provides a death benefit and has a potential cash value
Costs	Typically, premiums are fixed over the set time period of the policy. Generally less expensive, but more expensive to obtain as investors age	Premiums can be fixed or variable, depending on policy type. Each premium is part cost of insurance, part investment
Payout/Access	• Benefit is typically obtained upon death of the insured when in force • Some policies offer "return of premium" riders, but costs can be prohibitive	• Death benefit is obtained upon death of the insured and cash value is accessible while alive • Additional riders allow for accelerated access to death benefits and/or cash value
Benefits	• Lower costs allow a client to only purchase the necessary insurance and invest the difference • Some policies are convertible to a permanent policy without additional underwriting	• Cash value can be accessed while alive • Cash value life insurance can provide tax deferral and tax-advantaged access • Policies can last for life (assuming owners keep up with any required payments)
Drawbacks	• Numerous studies have shown that around 1% of term policies pay their death benefit, with the vast majority expiring/lapsing before payout • Term insurance is only in place for the agreed-upon duration; obtaining additional coverage later could be costly (or impossible)	• Cash value policies can be incredibly expensive, averaging 5x—15x more than term. • Policies that are underfunded will not produce sufficient cash value to access without risk of collapse • Policies that lapse could trigger taxes and penalties on appreciation accessed while in force
Summary	Appropriate for most individuals who are looking for life insurance to cover expenses or replace income for a certain period of time (such as raising children or paying a mortgage)	Effective for advanced planning scenarios such as providing funds to cover possible estate taxes, having a lifelong dependent with special needs, or aiming to equalize inheritances

Note: While permanent policy premiums can be 5x–15x higher than comparable term policies, portions of those payments go to expenses not associated with the cost of insurance, such as administrative costs and building cash value inside the policy.

Source: Vanguard, based on data from Policygenius (2022).

FIGURE A-2.
Side-by-side comparison of individual versus group coverage

	Individual life insurance	Group life insurance
Coverage	No predetermined cap of coverage; insurers determine maximum levels on a case-by-case basis based on proven financial need	Coverage is typically capped at some multiple of employee's income. Most plans use only salary (no bonus or commissions) to determine
Costs	Unhealthy individuals (such as smokers or those with preexisting conditions) might find personal coverage to be more costly. For healthy individuals, it could be cheaper over time	Group policies might be more expensive for healthy individuals because of the pooling of risk factors. For those with preexisting conditions or underlying health risks, group coverage rates might be more favorable
Portability	Portability issues do not apply to personal policies, as they are not linked to employment	While not common, group coverage can be maintained after leaving an employer (if the policy is either convertible or portable)
Flexibility	Coverage can typically only be reduced without going through underwriting. Policy terms could restrict how often or how much existing policies can be reduced without forfeiting coverage	Coverage can typically be adjusted up or down during open enrollment periods, with no limitations on frequency
Underwriting	Underwriting is required for most personal life insurance policies (process varies by level of coverage)	Standard coverage (as defined by the employer) might not be subject to underwriting, but supplemental coverage might require it
Summary	• Appropriate for investors looking to insure longer-term needs, such as ensuring financial goals will be met or long-term obligations can be paid off • Could be more attractive to healthier individuals and those who might change employers more frequently	• Investors looking to insure shorter-term needs (<10 years) might favor group coverage because premium increases are not as prohibitive • Investors in below-average health might favor this option because underwriting risks can be pooled

Source: Vanguard.

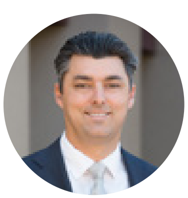
APPENDIX 3.

Questions to consider

While this paper serves as a foundation for assessing life insurance needs, we understand that every situation is unique. In addition to this approach, the personal preferences and circumstances of a household will shape both initial and ongoing needs. Below is a list of some questions to help understand how your situation might vary after the starting point laid out:

- How would the death of a loved one affect the survivor's career trajectory? Would the survivor want to take time off to grieve or support family? How much time would they want to take off? Would they be able to continue the same career path, or would they need to scale back hours to be with children?
- What sources of income will be available upon your passing? For example, how will Social Security survivor benefits for dependents and (if applicable) spouses help provide ongoing support?
- What new expenses might arise (or be eliminated) after your passing? Does one person commute farther than another? What will the surviving spouse do for health insurance if the employee of the sponsoring company is the one to pass away? How will a change in filing status affect the surviving spouse's take-home pay?
- How will childcare needs change upon the passing of a spouse? Is there a local support network of family able and willing to assist with transportation, day care, or sitting? If not, what will it cost to hire someone? What about emotional support or bonding opportunities for surviving children?
- What debts would the survivor want paid off if a loved one died? Would the survivor stay in the current home, or downsize or relocate? Does the insured have debts that could be forgiven at death? Are there cosigners on any debts who might be responsible after the death of a debtor?
- With respect to life insurance, which concerns you more financially: dealing with unexpected costs shortly after a loved one's passing, or obligations lasting longer than originally expected?

Authors



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