

What's my target? Estimating college costs

For many families, planning for college costs is a top financial priority. A complex landscape of consumer choices, loans, tuition discounting, and public and private aid, however, can make it difficult to pin down the answer to questions like “How much will this cost us?”

This is especially so for young families, for whom future spending needs are necessarily vague. Parents can easily be discouraged by (among other things) the “sticker shock” of current college costs and uncertainty around inflation going forward.

In this paper, we will explore how the dynamics of financial aid and net pricing can help families set a realistic college savings plan that can be personalized to their needs and financial situation. To highlight the importance of both initial planning and later recalibration, we also present two case studies that show how life changes can affect expected net pricing and savings objectives.

Understand the college financing landscape.

For many schools, listed costs can be staggeringly high. Fortunately, most families will pay a great deal less. Financial aid, discounts, scholarships, and loans account for the wide gap between published prices and net costs.

Define a realistic savings target.

Several factors go into what a family will ultimately pay for higher education. Income, assets, and family composition all affect both how much a family will be expected to pay for college and how much aid may be available. Incorporating these variables into your savings target will help you create a more realistic and achievable investment plan.

Adapt your plan as your needs evolve.

What will likely start as a vague plan for a young child should crystallize over time as that child's strengths and ambitions emerge and develop. Your financial situation will likely change as well. As more details become known, cost estimates can be made more exact. Periodic updates to your plan will ensure that you stay on track.

Introduction

When developing any goal-based investment plan, it's important to have a general idea of how much savings is ultimately needed to be successful. A retirement plan, for example, may look to replace a percentage of pre-retirement earnings. A home renovation can be based on a contractor's estimate, or the scope of work could be designed to fit into a particular budget. College costs, unfortunately, can be difficult to pin down. Tuition and other costs can vary widely from school to school, or even from one student to another within the same school. Most families won't have a clear idea of how much they'll be spending (or borrowing) until a few months before the first tuition check is due.

Planning and saving early are important, but infants and small children aren't usually able to express their career aspirations, the type of education they'll need to get there, or their preferences for obtaining such an education. The college-planning process for new parents typically involves (1) assessing current enrollment expenses, (2) growing these figures using historically above-average college inflation assumptions for the next 18–22 years, and (3) despairing at the result. Parents of a potential member of the class of 2040, for example, might take the average annual cost of attendance for a four-year private college (about \$55,800 for the 2020–2021 school year) and apply the average annual inflation rate for college costs for the past 20 years (4.4%)—and arrive at the staggeringly high total-cost estimate of \$520,000 for the four years.¹

This is an unattainable goal for most of us. Thankfully, it also is far beyond what is usually spent once grants, scholarships, loans, work study packages, and tax credits are factored in. Both need- and merit-based financial aid can reduce net costs (what families actually pay). Since parents may not be the most objective assessors of their child's brilliance or ability, expectations of merit aid should probably be absent from a plan until the last part of the planning horizon, when calculations can be made using the student's track record.

Plan and start saving soon after your child is born.

IMPORTANT: The projections and other information generated by the 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. VCMM results will vary with each use and over time. See Appendix for more information about the VCMM.

¹ Sources: Vanguard calculations, using data from Ma and Pender (2021) and the Bureau of Labor Statistics.

In this paper, we will focus on dynamics of need-based financial aid. We do note, however, that knowing what additional types of funding are available from schools of interest can help students and their families narrow down the list of where to apply.

In the face of these uncertain future expenses, families are often pointed toward 529 plans and advised to simply “save as much as possible.” But saving more for one goal requires shifting other financial priorities—and maximizing tax incentives is best done with the use of specialized account types that aren’t generally fungible across goals. Money put into such an account—a 529 for college, an IRA or 401(k) for retirement, an HSA for health care—only remains tax-advantaged if the money is used in accordance with the account’s rules. Developing more realistic college savings targets early on by understanding net college pricing dynamics can help families create, with a measure of confidence, a financial plan that is both efficient and attainable.

Recovering from “sticker shock”

Published tuition rates and other attendance costs can be dizzyingly high; it’s not uncommon for the most sought-after schools to list total prices of \$80,000 per year or higher. In reality, the vast majority of students and their families will pay considerably less once financial aid and other discounting is factored in. On average, grants and scholarships make up about 25% of a family’s total college funding (Sallie Mae and Ipsos, 2021).

On average, grants and scholarships make up about 25% of a family’s total college funding.

The gulf between listed total prices (tuition and fees, books and supplies, room and board, and other campus expenses) and net prices can be profound. **Figure 1** shows the distribution of listed total and net pricing for private and public schools from the 2019–2020 school year. (The private category includes only not-for-profit schools, here and throughout this paper.) Beyond the distinction between public and private, we’ve used selectivity based on average acceptance rates as a proxy for consumer demand. Generally, more selective schools can command higher prices. Averages can be deceiving, though, and the range of potential pricing is wide. Net pricing is significantly lower than the standard published price across all categories. The most expensive schools tend to have the widest gulf between their listed total price and actual net cost.

Regional differences are also material. The average total (net) price of a private college in New England is about \$18,500 (\$8,000) higher than its counterpart in the Southeast.² Public colleges are a domain of state governments, and pricing can vary greatly by state.

Given the huge range of potential costs, understanding the dynamics of college pricing can help financial advisors and college savers develop realistic and manageable plans. Simple averages of net pricing, however, can be just as misleading as published prices. Most families won't need to delve deeply into the byzantine intricacies of the financial aid process until they actually apply for aid, but having a sense of what calculations are used can help you make informed projections early on.

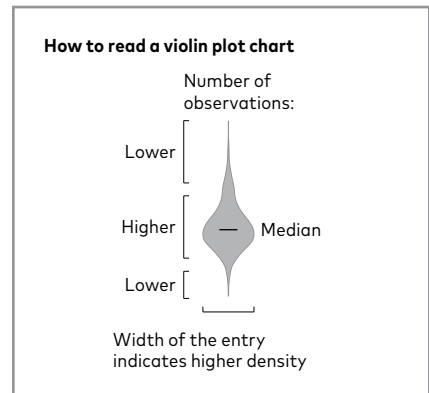
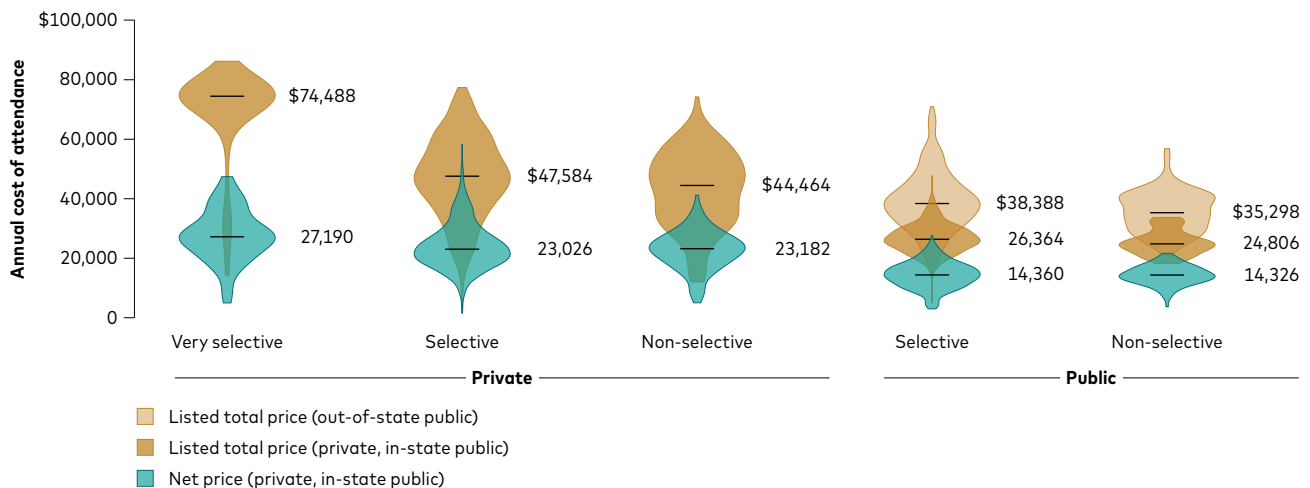


FIGURE 1.
Depending on type of school and family income and assets, the gap between listed total pricing and net pricing can be quite wide

Average listed total and net price of private and public colleges by selectivity, 2019–2020



Notes: Figure shows average listed total pricing and net pricing across private not-for-profit and public four-year U.S. institutions by selectivity for the 2019–2020 school year. Median values are called out with horizontal lines. We used the 2018 Carnegie Classifications (carnegieclassifications.iu.edu) to remove any special-focus schools from the private universe. IPEDS only reports net cost information for private or in-district/in-state students for public schools; out-of-state net pricing for public schools is not available. Listed total pricing includes tuition and fees, books and supplies, on-campus room and board (if available; otherwise, off-campus not-with-family housing is used), and other campus expenses. Selectivity is based on average admissions rates from the 2010–2019 school years. We define public schools as selective if the average admission rate is lower than or equal to 80% and as non-selective if that rate is higher than 80%. We define private schools as very selective if the average admissions rate is less than or equal to 40%, as selective if that rate is between 40% and 80%, and as non-selective if that rate exceeds 80%.

Sources: Vanguard calculations, using data from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS; available at nces.ed.gov/ipeds).

² New England region: CT, ME, MA, NH, RI, and VT. Southeast region: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, and WV. We used data from the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS; nces.ed.gov/ipeds) as our source for total and net pricing for the 2019–2020 school year for private four-year U.S.-only institutions. (For the housing component of this cost, on-campus housing is used if available; otherwise, off-campus, not-with-family housing is used.) We used the 2018 Carnegie Classifications (carnegieclassifications.iu.edu) to remove any special-focus schools from the private universe.

Many institutions require families seeking aid to fill out and submit the Free Application for Student Aid (FAFSA) and/or the CSS Profile application maintained by the College Board.³ Both applications use a family's financial data, including student and parent income and selective categories of assets, to assess the family's financial aid eligibility. This eligibility, expressed in dollars, is currently known as the student's Expected Family Contribution (EFC) and will soon be termed the Student Aid Index (SAI) (Consolidated Appropriations Act, 2021). For simplicity, we will be using the term SAI for the remainder of this paper. There are some differences in how the EFC is calculated versus how the SAI will be calculated, but the best way to think of the end result is that it's a dollar value that is determined to be the amount that a family could pay for a year of school, either through income, assets, and savings.

Student Aid Index (SAI):
The amount a family could pay for a year of school, either through income, assets, and savings.

The SAI is then compared to the cost of attendance (COA) per year for a particular school. If a student has an SAI of \$40,000 and the COA of the school they are applying to is \$35,000, no need-based aid will be awarded. The same student applying to a school with a COA of \$70,000 may receive a need-based aid package of up to \$30,000. While families with above-average incomes and assets may assume that need-based aid will not be available to them, this is not always the case—if the COA is high enough, even families of considerable means may be eligible for this type of aid. That's because while the specific details will vary by a family's income and assets and a school's cost of attendance, *the formula for determining need remains the same:*

$$\text{Financial need} = \text{Cost of attendance} - \text{SAI}$$

It's important to keep in mind that demonstrating a financial need is not a guarantee of receiving financial aid. While certain state or federal grants and loans are automatically offered if the family meets the eligibility criteria, most aid in the form of institutional grants is discretionary. And while many well-endowed schools maintain policies of meeting 100% of a student's need as demonstrated by the financial aid application, these tend to be the some of the more difficult programs to gain admission to, and many include federal student loans in their assessment of a family's possible contribution.⁴

³ Roughly 240 institutions and programs use the CSS Profile. A list is available at profile.collegeboard.org/profile/ppi/participatinginstitutions.aspx.

⁴ A school's need-based financial aid package can include many types of aid—outright grants, work study jobs, and subsidized federal loans.

In recent years, estimates of net college pricing have been easier to come by. Under legislation signed into law in 2008, colleges and universities participating in the federal financial aid system must have a net price calculator on their website. Retrieving estimates from these sites may be tedious, but it does give families a sense of the net costs and aid policies of schools that might be on their list.

One simplifying resource is [MyinTuition.org](https://www.myintuition.org), a website that partners with over 70 colleges and universities to provide simplified net pricing estimates from just a few personalized inputs. This site can help parents get a meaningful general estimate that considers their income, assets, and family structure.

Using this tool, we compiled net pricing estimates for families using a range of assumptions of annual household income and assets (**Figure 2**). Figure 2a shows the distribution of estimates for families with one student in college, while Figure 2b shows the distribution of estimates for families with two students attending college in the same year.

We found that income affects aid more than assets. While some financial aid is still available for families in the \$225,000 income band (particularly those with fewer assets), this aid all but disappears for families in the \$275,000 band, regardless of asset level. Having two children in college lowered the average net cost of attendance by about 28% across all asset levels, with even the highest-income families receiving an average discount of around \$10,000.

FIGURE 2
Income (and assets) push up estimated net cost; having more than one child in college brings it down some

a. Families with one student in college

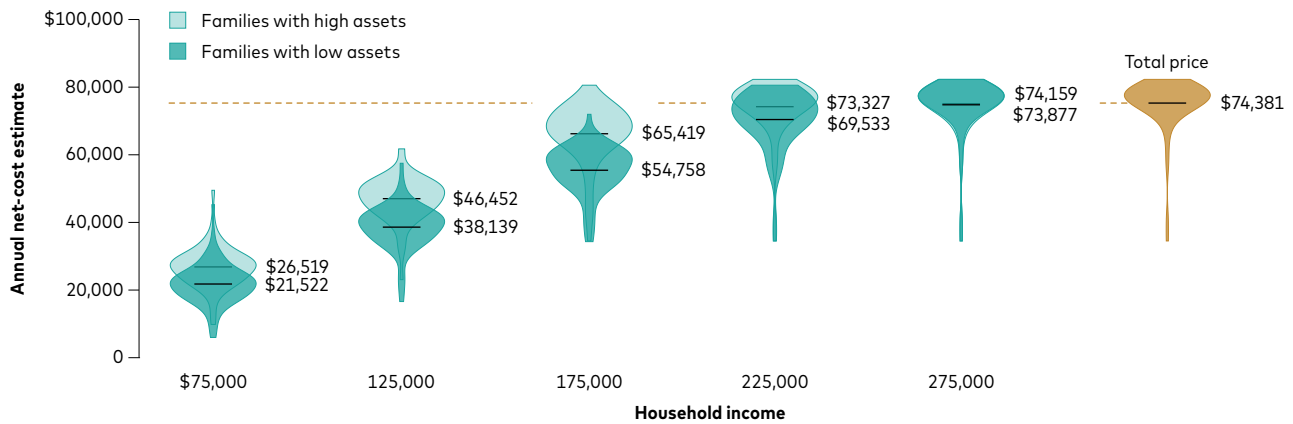
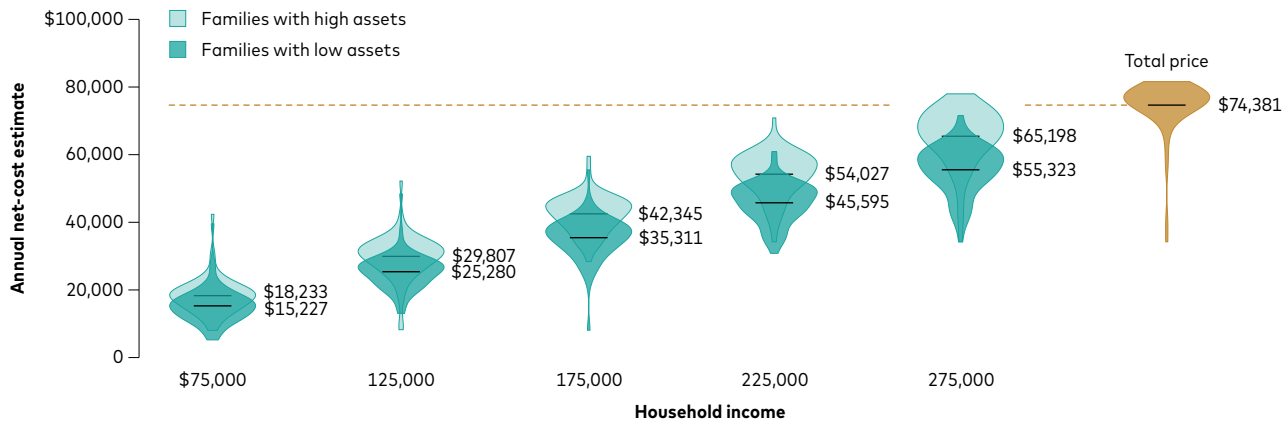


FIGURE 2 (CONTINUED)

Income (and assets) push up estimated net cost; having more than one child in college brings it down some

b. Families with two students in college



Notes: Figure shows MyinTuition pricing for one year of college for families with one (Figure 2a) and two (Figure 2b) college students by asset level (light turquoise for high, dark turquoise for low) and household income (range is from \$75,000 to \$275,000). Mean values are called out with horizontal lines. Sixty-seven schools were reviewed. Total price (defined by MyinTuition as tuition, fees, room and board, and other costs) is shown in dark yellow. Low (high) assets are defined as assets totaling one-half (twice) household income. For example, if income is \$75,000, low assets would be defined as \$37,500; high assets, as \$150,000. Home values and home equity are assumed to be twice income in all scenarios. Annual net-cost estimate is defined as the best estimate plus the value of any applicable loan and/or work study offered.

Sources: Vanguard calculations, using data from MyinTuition, collected in February 2021.

Making useful projections

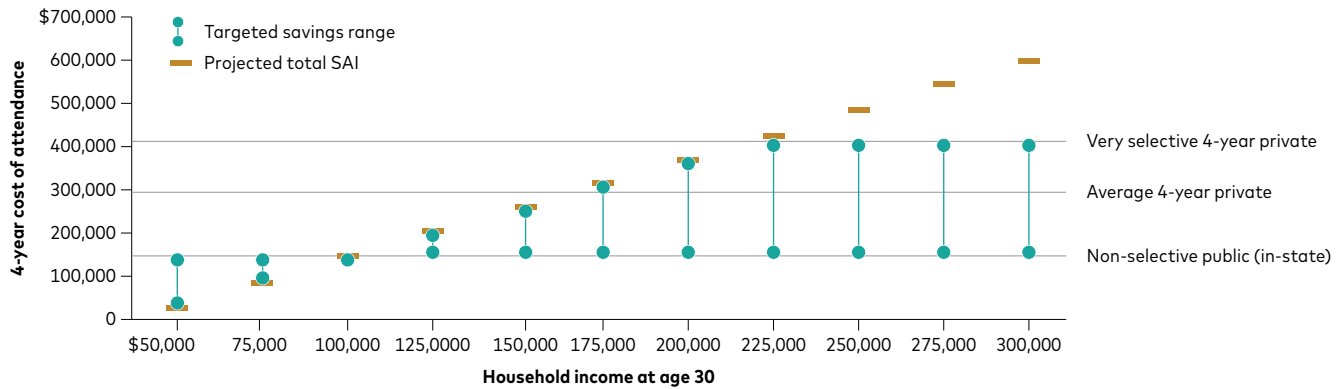
Given the potential for such a wide disparity between published and net pricing, projections of a student's SAI can give families useful context as they set up a college savings plan. To illustrate this, we created a model to project future SAI that includes the most common necessary inputs, assumptions of typical income growth over time, and inflation and asset growth derived from the Vanguard Capital Markets Model (VCMM).⁵ Figure 3 combines these SAI projections across various household incomes, incorporating COA estimates for the average very selective private, private, and in-state public colleges.

⁵ To determine future salary, Vanguard uses a wage scale modeled off the U.S. Social Security Administration's wage index. The wage index is based on reported wages across workers ages 25–65, grouped into ranges for low-, medium-, and high-income earners and is available at ssa.gov/oact/cola/AWI.html. See Appendix for more information about the VCMM.

Putting these projections together can help create a useful range of potential costs that can then be personalized to a family's financial situation. Either the student's SAI or the in-state college costs (whichever is lower) would form the floor of this range. The ceiling would be the higher of those two values (except where SAI exceeds projections for private-school costs, as it does in the case of wealthier families, where those private costs serve as the cap.) Since the SAI projection is dependent on assumptions of assets and savings, we assume here that families are saving in a 529 account to the degree necessary to fund the full cost of education as defined by SAI while using an investment glide path optimized for college savings purposes (Donaldson et al., 2020).

FIGURE 3
Depending on choice of college and a family's projected income and savings, expected future costs can vary significantly

Income-based savings targets



Notes: SAI and listed total cost projections are for a family with two 30-year-old parents and one child born in the current year. Student is assumed to start college at age 18 and attend for four consecutive years. Parents are assumed to save income in equal percentages of current and future income; child is assumed to have no personal assets or income. Private category includes not-for-profit four-year colleges only. Present listed total cost averages—non-selective in-state public, \$25,000, average private, \$50,000, and very selective private, \$70,000—were determined from IPEDS data. Current listed total costs are grown at a 2% annual inflation rate.

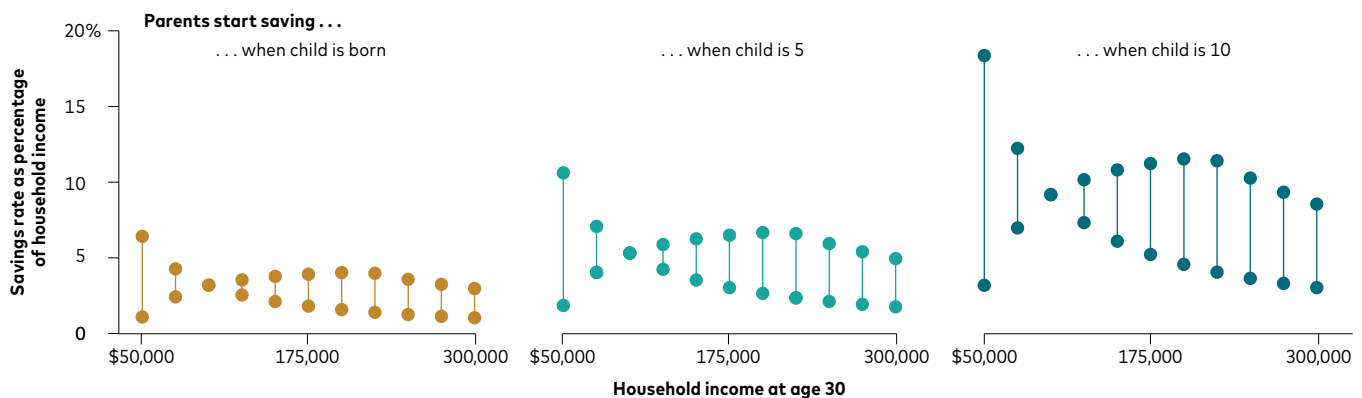
Sources: Vanguard calculations, using data from the VCMM, glide-path construction from [Donaldson et al. \(2020\)](#), which is specifically built for 529 plans, the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS; available at nces.ed.gov/ipeds), and a wage scale modeled off the U.S. Social Security Administration's wage index.

IMPORTANT: The projections and other information generated by the 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. Distribution of return outcomes from VCMM are derived from 10,000 simulations for each modeled asset class. Simulations are as of December 31, 2020. Results from the model may vary with each use and over time. For more information on VCMM, see the Appendix.

While a personalized estimate and savings plan is preferable, some very useful general conclusions can be drawn from this rough analysis. **Figure 4** shows the savings amount needed as a constant percent of annual income to achieve both the upper and lower bounds of our range. Savings are again assumed to be made into a 529 plan, given those plans' tax-advantaged growth and tax-advantaged withdrawals when used for qualified purposes.⁶ These 529 savings targets fall within a relatively narrow range. When savings begin at the child's birth, rates range between 1.8% to 6.4% of income per child, with an average of rate of 2.9%. The rates increase if the parents start saving later, since parents must play "catch up." For parents who start saving when their child is 5, the average savings rate would rise to 4.7%—while for parents who start saving when their child is 10, the average rate would hit 8.2%.

When starting early, aim to save about 3% of income per year, per child.

FIGURE 4
Starting early can keep a plan manageable



Notes: Savings rates by age of child when savings begin are shown as a percent of household income. SAI and listed total cost projections are for a family with two 30-year-old parents and one child born in the current year. Student is assumed to start college at age 18 and attend for four consecutive years. Parents are assumed to contribute income in equal amounts; child is assumed to have no personal assets. Schools are assumed to be either public or private, with the private category limited to not-for-profit four-year colleges. Present listed total cost averages—non-selective in-state public, \$25,000; average private, \$50,000; and very selective private, \$70,000—are determined from IPEDS data.

Sources: Vanguard calculations, using data from VCMM, glide-path construction from Donaldson et al. (2020), which is specifically built for 529 plans, the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS; available at nces.ed.gov/ipeds), and a wage scale modeled off the U.S. Social Security Administration's wage index.

IMPORTANT: The projections and other information generated by the 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. Distribution of return outcomes from VCMM are derived from 10,000 simulations for each modeled asset class. Simulations are as of December 31, 2020. Results from the model may vary with each use and over time. For more information on VCMM, see the Appendix.

⁶ Earnings on nonqualified withdrawals may be subject to federal income tax and a 10% federal penalty tax, as well as state and local income taxes. The availability of tax or other benefits may be contingent on meeting other requirements. While the federal government does not offer contribution deductions, some states do allow for state tax deductions on contributions to 529 plans. Each state has specific rules and conditions that are also subject to legislation change. Review your state's tax rules and consult a qualified tax professional to determine how tax advantages may apply to your situation. Certain conditions may apply.

Using projected SAI as a college savings target has several benefits. Most importantly, it gives families a more realistic, attainable goal that is reflective of their personal financial situation. This can help families to have the confidence to follow through with a financial plan that incorporates other essential priorities such as saving for retirement.

Another benefit is that this projection is independent of assumptions for tuition inflation. While tuition inflation has been stubbornly high for the past several decades, with average annual published costs growing by 2.81% for private institutions over the last 10 years, it can be difficult to project reasonable assumptions going forward.⁷ For private colleges, increasing aid amounts have moderated net cost growth, which was only 1.75% annually (–0.10% in real terms, using 2010 as the base year). Public school tuition costs have also increased in both published (2.37%) and net pricing terms (2.28%, or 0.56% in real terms, using a 2010 base). Whether these trends continue will likely depend on public funding for these institutions, which will vary from state to state.

The potential for college costs to outpace broader inflation remains a risk that prudent planning should consider. As Commonfund notes in its 2021 Higher Education Price Index update, the cost drivers for institutes of higher learning differ greatly from broad measures of prices such as the Consumer Price Index, with labor costs for faculty and support staff dominating most budgets. Wealthier families whose projected SAI is likely to put them out of the range of need-based financial aid will be more exposed to this risk and should plan accordingly.

In recent years, increased financial aid has largely offset tuition inflation.

⁷ Sources: Vanguard calculations, using data from IPEDS for the school years 2010–2019 (includes only schools with at least 10 years of total pricing history).

Take advantage of 529 benefits and keep plans flexible

For most investors, a 529 plan will be the preferred vehicle for college savings. These plans are state-sponsored qualified tuition programs that offer either prepaid tuition plans or investment accounts. Some states offer tax or other incentives for contributions and assets grow tax deferred from both a federal and state perspective. Distributions from accounts are tax-free if they are offset by qualified educational expenses.⁸ Participation in an investor's home state plan is typically preferred for those who live in a state that offers benefits exclusively to residents using in-state plans.⁹ Costs, investment options, and other features can vary by both state and plan. In its 2021 report on the 529 savings plan landscape, Morningstar notes that annual costs for age-based investments can range from less than 0.20% of assets for the least-expensive, direct-sold options to over 1.2% for some advisor-sold plans (Hume and Zink, 2021). High investment costs can erode potential tax savings from contributions, so it may be beneficial to shop around to find the plan that best suits your needs.

Savings in 529 accounts can lower prospective financial aid, but the impact is minimal. According to FAFSA methodology, having parental 529 savings beyond an asset-protection threshold raises the SAI as much as 5.64%—in other words, \$564 of potential aid may be lost for every \$10,000 in college savings. Exceeding the income threshold, on the other hand, pushes up the SAI as much as 47%, or \$4,700 less aid for each additional \$10,000 of income.

It's also important to note that the aid reduction for savings in a 529 would also apply to savings in bank accounts or other taxable investment accounts. Retirement assets such as IRAs are generally excluded from aid calculations. Using IRAs for college savings would, however, reduce the availability of such accounts for the investor's retirement savings goals and potentially reduce financial aid when the assets are withdrawn, since distributions—even from Roth IRAs—will be counted as income when aid is calculated. For a detailed analysis of how college spending decisions can affect taxes and financial aid, see [Tackling the Tuition Bill: Managing Higher Education Expenses](#) (Kahler and Bruno, 2021).

- 8** Earnings on nonqualified withdrawals may be subject to federal income tax and a 10% federal penalty tax, as well as state and local income taxes. The availability of tax or other benefits may be contingent on meeting other requirements. See IRS Publication 970 for details on qualified expenses.
- 9** While the federal government does not offer contribution deductions, some states do allow for state tax deductions on contributions to 529 plans. Each state has specific rules and conditions that are also subject to legislation change. Please review your state's tax rules and consult a qualified tax professional to determine how these rules might apply to your situation. Certain conditions may apply.

Figure 4 underscores the benefits of an early start when it comes to college savings. While modeling costs in the way we've outlined in the previous section can be useful when making projections for an inevitably uncertain future, it's important to revisit and revise plans periodically. As children age, their desires and expectations for their educational future tend to fall into focus. As the universe of potential schools or types of schools narrows, so too will the range of potential costs. Adjusting the savings plan accordingly can help families avoid unfortunate financial surprises down the road.

Our analysis shows that a key driver of net college costs is a family's financial position near the time of enrollment. When modeling net-cost assumptions, material changes to household income or applicable assets should occasion a revisiting of the plan. For example, a sizable promotion can push household income to higher-than-planned levels, resulting in higher family funding expectations and higher net costs. Revising the plan as these crucial inputs change can help avoid over- or undersaving for education.

Data available from the Department of Education and disseminated through a variety of sources can provide insight into how likely a particular institution is to dole out either merit- or need-based aid. Families with moderate or lower income may be better served by targeting schools that have policies of fully meeting demonstrated financial need. These are often very selective schools with high listed total prices. Assuming the student is a good fit academically, high published pricing should not discourage families from applying in these cases, since it can be assumed that offsetting grants will be available. Conversely, families whose income or savings may disqualify the student from need-based aid may want to seek out schools offering merit aid.

Ultimately, the price paid for college will largely come down to the choice of where to attend. As with most choices we face as consumers, there are a wide range of options here, with some schools more "luxurious" than others. Developing a sound college savings plan early and contributing consistently may not result in a college nest egg that can cover every option. What it can do is expand the opportunity set whereby students can pursue their educational ambitions without having to rely on student or parent loans to an unsustainable degree.

Case Studies

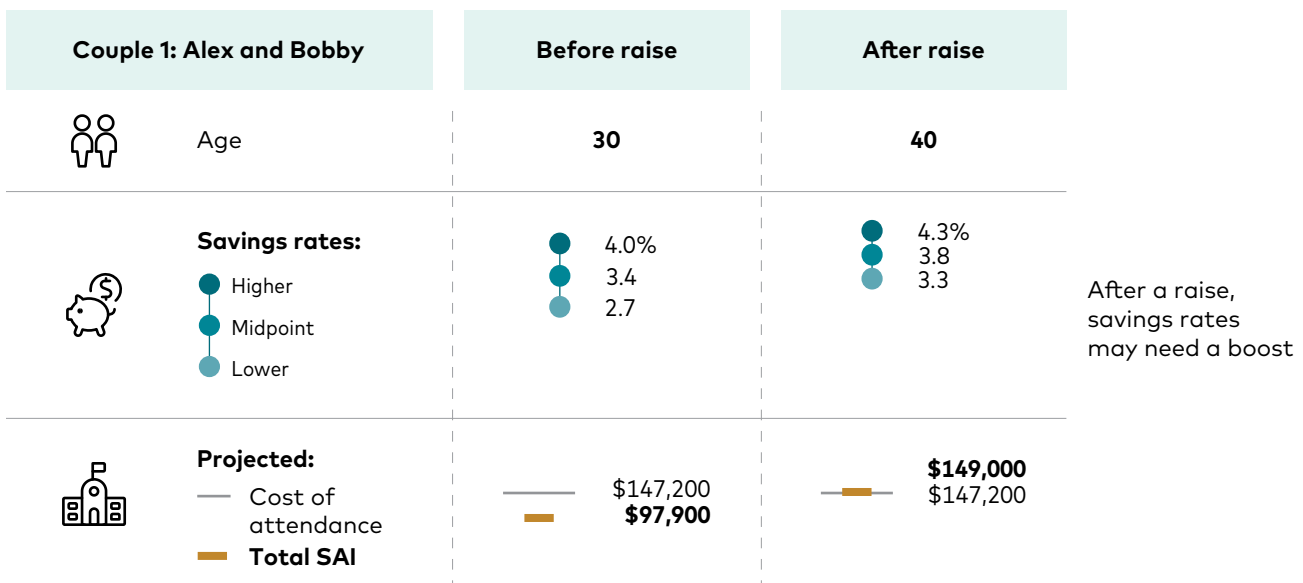
To show how incorporating the SAI can help families establish and adjust their savings plans, we will look at two hypothetical families that replan and adjust their savings strategy as life changes occur (**Figure 5**). Both scenarios assume that the lower savings rate is computed from the lesser of expected future college costs for the student(s), calculated using average in-state cost expectations (\$25,000 in today's dollars at 2% annual inflation, totaled over four years of college attendance), and future projected SAI over the expected college years (four years per student). Similarly, the upper savings rate will be determined from the larger of those two values. Finally, the midpoint savings rate will be based on the average of the upper and lower cost projections.¹⁰

Meet Couple 1, Alex and Bobby, both 30 years old, who recently had their first child (**Figure 5a**). Together they earn \$80,000 a year. In this case, the family starts off at the lower bound of expected SAI (\$97,900) and the higher bound of projected total cost of attendance (\$147,200)—which translates to a lower savings rate of 2.7% and an upper savings rate of 4.0%.

At 40, Alex has expanded her professional skill set; she changes jobs within her company and gets a significant raise that increases her salary by about 50%. The raise, however, pushes the family's SAI from \$97,000 to \$149,000, while expectations for the cost of attendance stay unchanged at \$147,200. This means that if Alex and Bobby were saving at the lower rate before the raise, they must now increase that rate by 1.5% to stay on track for covering expected college costs. Conversely, if they were saving at the higher rate from the beginning, their accrued savings to date and the size of the raise would offset some of these effects, and they could in fact choose to decrease their annual savings rate by 0.7% and still be on track. Given that the future is always uncertain, and assuming there is a powerful desire to cover most of the expected college expenses, those with budgeting ability may choose to save more earlier on, as doing so can give them more flexibility later.

FIGURE 5
Target savings rates, and target savings, will change with life events

a. Couple 1: One parent gets an unexpected raise at age 40



¹⁰ Note that this guideline does not apply in all possible scenarios. When the cost of attendance exceeds the expected SAI, the upper value becomes the cost of attendance. See Figure 3 (incomes above \$225,000) for an example.

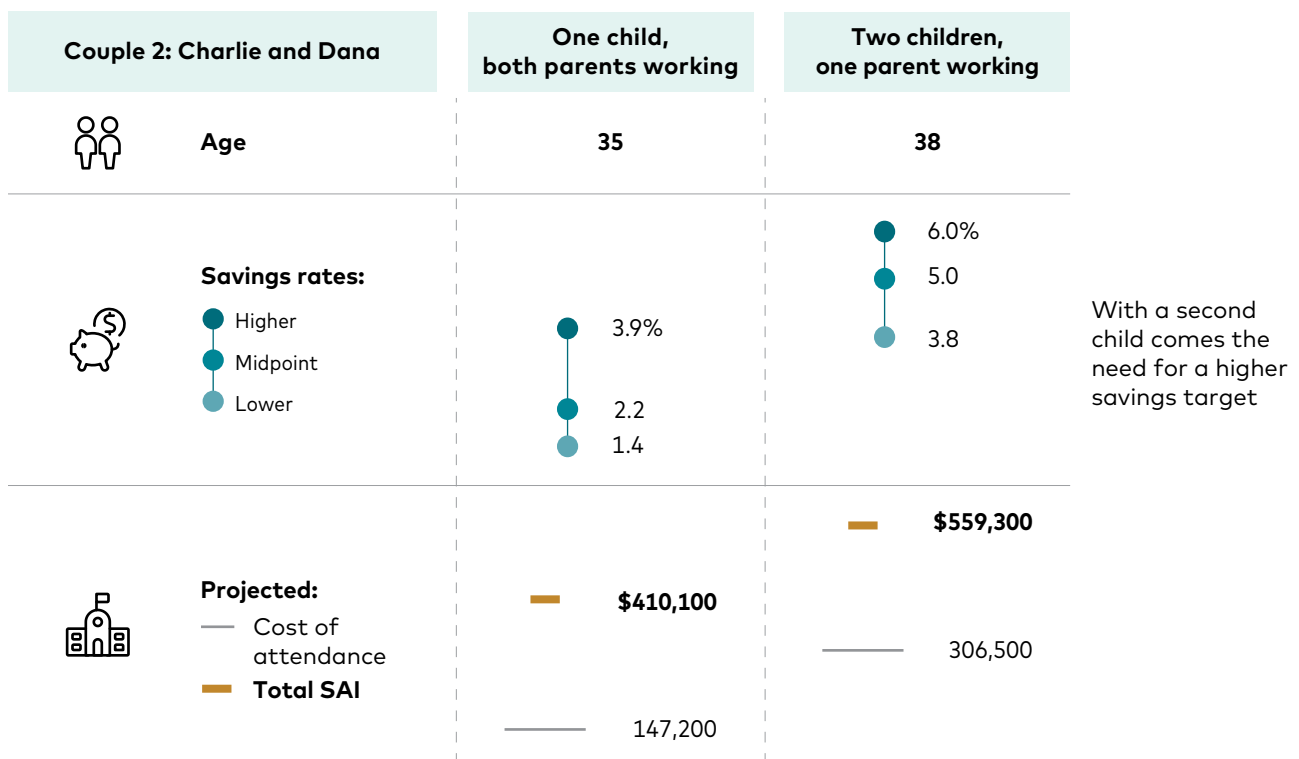
Now meet Couple 2, Charlie and Dana. Both 35, they have just adopted a newborn, and are not planning to have a second child. Together they earn \$250,000 a year. At this point, their SAI (\$410,100) is significantly higher than expected cost of attendance (\$147,200), resulting in a broad range of possible savings rates (1.4% to 3.9%).

At 38, the couple have their second child and one parent leaves the workforce. Although having less income reduces the SAI, the arrival of the second child pushes up the overall savings rate needed, since Charlie and Dana are now saving for two children. Concurrently, four-year tuition costs rise from \$147,200 to \$306,500 and the SAI rises from \$410,100 to \$559,300. In tandem with the decline in income, these changes mean that the lower savings rate increases by 2.3% while the upper rate increases by 2.1%. Recall that this scenario replans each year and that neither the birth of the second child nor the departure of one parent from the workforce were known in advance. In a situation where Charlie and Dana expected these life events and incorporated them into their plan, their savings rate would start at 3.7% and remain at that level. If plan stability is important to you, it is best to consider all relevant factors as soon as they are known and build those considerations into your savings plan.

FIGURE 5 (CONTINUED)

An unplanned salary increase results in higher savings rates—as does having more children

b. Couple 2: Parents have second child and one parent leaves the workforce



Notes: Figure shows how projected lower, midpoint, and higher savings rates for the expected cost of four years at a non-selective in-state school would change for two couples after a major life event. Figure 5a presents Couple 1, who become parents at age 30; one of them receives an unexpected and substantial salary increase at age 40. Figure 5b presents Couple 2, who become parents at age 35 and expect to have only one child, then have a second child at 38, at which point one parent leaves the workforce.

Sources: Vanguard calculations, using data from the VCMM, glide-path construction from Donaldson et al. (2020), which is specifically built for 529 plans, the National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS; available at nces.ed.gov/ipeds), and a wage scale modeled off the U.S. Social Security Administration's wage index.

IMPORTANT: The projections and other information generated by the 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. Distribution of return outcomes from VCMM are derived from 10,000 simulations for each modeled asset class. Simulations are as of December 31, 2020. Results from the model may vary with each use and over time. For more information on VCMM, see the Appendix.

Conclusion

While college costs may seem intimidating and out-of-reach at first glance, those numbers can become much more manageable when personalizing a savings plan and incorporating anticipated aid. Using expected SAI can help you develop more realistic college cost expectations and savings targets.

No matter the situation, starting to save as soon as possible, especially in tax-advantaged accounts such as 529 plans, is more likely to set you up for success down the road.

As our case studies show, it is best to review and adjust your targets periodically, especially after big life events, to ensure that everything stays on course. Incorporating the latest information into your plan as you go can help minimize unexpected savings-rate shocks.

References

- Commonfund Institute, 2021. *Commonfund Higher Education Price Index 2021 Update*; available at <https://www.commonfund.org/hubfs/04%20Institute/HEPI/Reports/Commonfund%20Higher%20Education%20Price%20Index.pdf?hsCtaTracking=957d1fbc-86c2-4f52-bd68-dc5023ee9d1f%7C970f603f-d3c4-442d-9d1b-0665801dcfa8>.
- Consolidated Appropriations Act, 2021. Pages 5,139–5,307; available at [congress.gov/116/cprt/HPRT42770/CPRT-116HPRT42770.pdf](https://www.congress.gov/116/cprt/HPRT42770/CPRT-116HPRT42770.pdf).
- Donaldson, Scott, Victor Zhu, Harshdeep Ahluwalia, and Roger Aliaga-Díaz, 2020. *Vanguard's Approach to 529 Investing: A More "Progressive" Glide-Path Design for Goals-Based Investing*. Valley Forge, Pa.: The Vanguard Group. Available at corporate.vanguard.com/content/dam/corp/research/pdf/Vanguards-approach-to-529-investing-A-more-progressive-glide-path-design-US-ISG529A_082020_Online-2.pdf.
- Hume, Madeline, and Emory Zink, 2021. *Advisor 529-Plan Landscape: Direct-Sold Plans Gain Favor*; available at [morningstar.com/articles/1048025/advisor-529-plan-landscape-direct-sold-plans-gain-favor](https://www.morningstar.com/articles/1048025/advisor-529-plan-landscape-direct-sold-plans-gain-favor).
- National Center for Education Statistics' Integrated Postsecondary Education Data System (IPEDS); available at nces.ed.gov/ipeds.
- Kahler, Jonathan R., and Maria A. Bruno, 2021. *Tackling the Tuition Bill: Managing Higher Education Expenses*. Valley Forge, Pa.: The Vanguard Group. Available at corporate.vanguard.com/content/dam/corp/research/pdf/Tackling-the-tuition-bill-Managing-higher-education-expenses-US-ISGTACK-092021.pdf.
- Ma, Jennifer, and Matea Pender, 2021. *Trends in College Pricing and Student Aid 2021*. New York: College Board; available at research.collegeboard.org/media/pdf/trends-college-pricing-student-aid-2021.pdf.
- Sallie Mae and Ipsos, 2021. *How America Pays for College 2021*; available at www.salliemae.com/content/dam/slm/writtencontent/Research/HowAmericaPaysforCollege2021.pdf.

Appendix

About the 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. VCMM results presented are as of December 31, 2020.

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.

Authors



Jonathan R. Kahler,
CFP®



Clifford S. Felton,
CFP®, CFA

Acknowledgements: The authors thank Kirena Manivannan and James Passman for their assistance in data gathering and analysis.

Connect with Vanguard®

vanguard.com

For more information about any 529 college savings plan, contact the plan provider to obtain a Program Description, which includes investment objectives, risks, charges, expenses, and other information; read and consider it carefully before investing. If you are not a taxpayer of the state offering the plan, consider before investing whether your or the designated beneficiary's home state offers any state tax or other benefits that are only available for investments in such state's qualified tuition program. Vanguard Marketing Corporation serves as distributor for some 529 plans.

All investing is subject to risk, including the possible loss of the money you invest.

CFA® is a registered trademark owned by CFA Institute.

Vanguard®

© 2024 The Vanguard Group, Inc.
All rights reserved. Vanguard Marketing Corporation, Distributor.

ISGWTR 022024