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It's elementary: Using 529s to pay for K–12 education

- 529 accounts are an increasingly popular way to save and invest for education. While these plans were originally designed to save for college, they can now be used to help pay for K–12 tuition.
- The federal tax benefit of using a 529 for K–12 tuition is clear, but tax treatment at the state level varies, ranging from deductions to penalties, which can complicate whether investors should actually use a 529 for this purpose.
- This paper explores how the tax treatment of these withdrawals at the state level, combined with the federal tax benefit, affects an individual's ability to build additional wealth through tax savings by using a 529 plan for K–12 tuition.
- In addition, this paper examines how investors are actually using 529s to pay for K–12 tuition and provides analysis of how and when glide-path portfolios are appropriate for that savings goal.

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Background

Qualified tuition programs, commonly known as 529 accounts, are an increasingly popular way to save and invest for education. Saving in a 529 plan also offers significant tax advantages: At the federal level, earnings accumulate tax-free, and withdrawals are tax-free provided the funds are used for qualified education expenses as allowed by the IRS's Qualified Tuition Program (QTP).

While the original function of 529 accounts was to save for college, the 2017 Tax Cuts and Jobs Act (TCJA) expanded QTP rules to allow 529s to be used for primary and secondary (K–12) education as well. Under the TCJA, account owners can withdraw up to $10,000 per year to pay for K–12 tuition without incurring federal tax or penalties.[1]

Most states have adopted the TCJA and allow 529 assets to be withdrawn for K–12 tuition without incurring state taxes or penalties. Eleven states, however, do not consider K–12 tuition a qualified expense.[2] In these states, withdrawing funds for K–12 education may incur taxes or penalties at the state level.

Potential tax benefit of 529s

To determine the potential benefit of using a 529 for K–12 tuition, we built a model that estimates the excess wealth an individual can build by investing in a 529 instead of a taxable brokerage account. The model considers an investor's state of residence, marital filing status, and income level, as these variables affect the tax treatment of 529s.

Our study focused on three hypothetical types of 529 investors, as shown in **Figure 1**. Profile A represents those who are saving for K–12 education only, Profile B represents those who are saving for both K–12 and college, and Profile C represents those who are saving for high school and college only.

For all three profiles, it is assumed that the account owner starts contributing and investing when the beneficiary is born, the beneficiary enters kindergarten at age 5, the account owner makes consistent contributions at the beginning of each year until the beneficiary completes grade 12, and both the 529 and the taxable brokerage account have an annual return rate of 4.57%, which is based on economic projections from the Vanguard Capital Markets Model® (VCMM) as of June 30, 2023.[3]

IMPORTANT: The projections and other information generated by the 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, 2023. Results from the model may vary with each use and over time. For more information, please see Appendix 3.

1 For college, 529 plan investors can withdraw funds to pay for tuition, books, and other supplies, but for K–12, funds can only be used for tuition.

2 The 11 states that do not consider K–12 tuition a qualified expense are California, Colorado, Hawaii, Illinois, Michigan, Minnesota, Nebraska, New Jersey, New York, Oregon, and Vermont.

3 The 4.57% annual return rate used here is the median projected return over 18 years of the Vanguard Target Enrollment Portfolios. The return assumes equal contributions and is based upon economic projections from the Vanguard Capital Markets Model as of June 30, 2023. The 4.57% return consists of a 3.41% income return and a 1.16% capital return.

FIGURE 1

Overview of hypothetical investor profiles

	Description	Marital filing status	Annual income	Annual 529 contribution	Withdrawal needs
Profile A: K–12 savers	Saving for K–12 tuition only: The investor begins withdrawals when the beneficiary enters kindergarten and continues through high school.	Married filing jointly	$150,000	$6,100/year for 18 years ($109,800 total contribution)	$10,000/year for 13 years ($130,000 total withdrawal)
Profile B: K–college savers	Saving for both K–12 and college: The investor begins withdrawals when the beneficiary enters kindergarten, continues through high school, and will have $100,000 remaining in the account for college expenses.	Married filing jointly	$150,000	$9,640/year for 18 years ($173,520 total contribution)	$10,000/year for 13 years plus $100,000 remaining for college ($230,000 total withdrawal)
Profile C: High school and college savers	Saving for high school and college only: The investor begins withdrawals when the beneficiary enters high school, continues through high school, and will have $100,000 remaining in the account for college expenses.	Married filing jointly	$150,000	$5,050/year for 18 years ($90,900 total contribution)	$10,000/year for 4 years plus $100,000 remaining for college ($140,000 total withdrawal)

Notes: These scenarios are hypothetical and are not representative of any client's account. Annual 529 contribution amounts were calculated by solving for the annual investment needed to make the target withdrawals using the assumed 4.57% return. All contributions are assumed to start when the beneficiary is born. Beneficiaries are assumed to enter kindergarten at age 5, enter high school at age 14, and finish high school at age 17. Contribution numbers are rounded. Tax assumptions are based on 2024 brackets at both the federal and state level.

Source: Vanguard.

As seen in **Figure 2**, the tax benefits of using a 529 to save for K–12 tuition can help investors in most states generate additional wealth over time. Further, investors who live in states with tax deductions that allow for K–12 withdrawals see the most benefit from using a 529. For Profile A investors, the average additional wealth created over 18 years in states that offer a tax deduction ($13,000) is more than 2.5 times the savings in states that do not offer one ($5,100) and in states that penalize K–12 withdrawals ($5,100).

FIGURE 2

Average additional wealth created by using a 529 for K–12 tuition

	Average additional wealth created over 18 years		
	K–12 allowed with tax deduction	**K–12 allowed**	**K–12 penalized**
Profile A	$13,000	$5,100	$5,100
Profile B	$23,400	$11,900	$15,800
Profile C	$17,100	$9,300	$15,000

Note: See Appendix 1 for a state-by-state breakdown of Profile A. K–12 allowed with tax deduction refers to states that allow 529 withdrawals for K–12 education and offer a tax deduction. K–12 allowed refers to states that allow 529 withdrawals for K–12 education and do not offer a tax deduction. K–12 penalized refers to states where 529 withdrawals for K–12 education are penalized; penalties vary by state.

Source: Vanguard.

However, even in states that penalize the use of 529s for K–12 tuition (with the exception of Minnesota), investors can still generate additional wealth by using a 529.

The reason for the additional wealth is twofold. First, regardless of how states tax these withdrawals, investors can take advantage of tax-deferred growth and tax-free withdrawals at the federal level. (**Appendix 1** breaks down the additional wealth created for investors saving for K–12 into federal and state tax savings.) Second, like the tax deductions, the types of penalties imposed by each state vary, which leads to a wide range of potential additional wealth among states, as shown in **Figure 3**. For example, Nebraska only recaptures previous tax deductions, effectively providing a delay in taxation for the investor, while in California the earnings portion of withdrawals is subject to income tax plus a 2.5% penalty.[4]

While our model shows additional wealth creation even in many states that impose a penalty, the model relies on a specific set of contribution and investment assumptions. Investors should consult a tax professional before using a 529 for K–12 expenses given the nuances involved in each state's tax code.

For each profile, we assume that account owners begin investing when the beneficiary is born. However, for investors who live in states that offer a tax deduction and do not penalize K–12 withdrawals, a 529 account can be used as a pass-through vehicle to receive a state tax benefit.[5] While using a 529 this way can be beneficial to gain a tax deduction in states that offer one, with this method investors miss out on federal tax benefits and the opportunity for investment growth.

Comparing the additional wealth created by Profile A investors who begin saving when their beneficiary is born to that of those who use the account solely as a pass-through, we found that investors who take advantage of the tax-deferred growth earn approximately 3.5 times the additional wealth, on average, highlighting the value of saving early (see **Appendix 2**).[6]

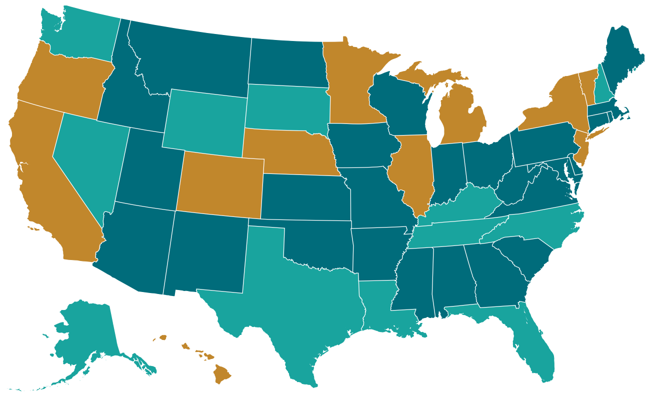
4 Tax treatments used in calculations are based on the 2024 tax code for each individual state.

5 Investors who use 529s as a pass-through vehicle do so by contributing money to the account with the sole purpose of claiming a state tax deduction. These assets are generally removed within a few days of the contribution, so they generally do not have time to appreciate; therefore, these investors receive little to no benefit from tax-deferred growth.

6 Additional wealth is the amount an investor can generate by using a 529 instead of a taxable brokerage account. All Profile A investors are assumed to withdraw $10,000 each year for K–12 expenses. Investors who are using the account solely as a pass-through for tax purposes are assumed to contribute $10,000 and immediately withdraw the funds, so no investment growth is assumed. Tax savings are assumed to be reinvested with an income return of 3.41% and a capital return of 1.16%

FIGURE 3

Additional wealth created over 18 years for Profile A by using a 529 for K–12 tuition, by state



	State tax treatment	K–12 savers
Alabama	K–12 allowed with tax deduction	$13,525
Alaska	K–12 allowed	$4,859
Arizona	K–12 allowed with tax deduction	$7,948
Arkansas	K–12 allowed with tax deduction	$12,136
California	K–12 penalized	$4,202
Colorado	K–12 penalized	$5,440
Connecticut	K–12 allowed with tax deduction	$14,598
Delaware	K–12 allowed with tax deduction	$7,584
District of Columbia	K–12 allowed with tax deduction	$19,380
Florida	K–12 allowed	$4,859
Georgia	K–12 allowed with tax deduction	$14,355
Hawaii	K–12 penalized	$4,672
Idaho	K–12 allowed with tax deduction	$14,878
Illinois	K–12 penalized	$6,263
Indiana	K–12 allowed with tax deduction	$35,524
Iowa	K–12 allowed with tax deduction	$14,710
Kansas	K–12 allowed with tax deduction	$14,573
Kentucky	K–12 allowed	$5,865
Louisiana	K–12 allowed	$5,927
Maine	K–12 allowed with tax deduction	$8,358
Maryland	K–12 allowed with tax deduction	$12,189
Massachusetts	K–12 allowed with tax deduction	$8,543
Michigan	K–12 penalized	$5,032
Minnesota	K–12 penalized	–$539
Mississippi	K–12 allowed with tax deduction	$13,015
Missouri	K–12 allowed with tax deduction	$13,185
Montana	K–12 allowed with tax deduction	$14,603
Nebraska	K–12 penalized	$7,138
Nevada	K–12 allowed	$4,859
New Hampshire	K–12 allowed	$4,859
New Jersey	K–12 penalized	$5,668
New Mexico	K–12 allowed with tax deduction	$12,839
New York	K–12 penalized	$4,180
North Carolina	K–12 allowed	$5,989
North Dakota	K–12 allowed with tax deduction	$8,150
Ohio	K–12 allowed with tax deduction	$9,166
Oklahoma	K–12 allowed with tax deduction	$13,100
Oregon	K–12 penalized	$7,716
Pennsylvania	K–12 allowed with tax deduction	$10,222
Rhode Island	K–12 allowed with tax deduction	$7,206
South Carolina	K–12 allowed with tax deduction	$15,420
South Dakota	K–12 allowed	$4,859
Tennessee	K–12 allowed	$4,859
Texas	K–12 allowed	$4,859
Utah	K–12 allowed with tax deduction	$11,365
Vermont	K–12 penalized	$6,685
Virginia	K–12 allowed with tax deduction	$11,869
Washington	K–12 allowed	$4,859
West Virginia	K–12 allowed with tax deduction	$13,729
Wisconsin	K–12 allowed with tax deduction	$12,355
Wyoming	K–12 allowed	$4,859

Notes: Additional wealth is defined as the amount an investor can generate by using a 529 over a taxable brokerage account. K–12 allowed with tax deduction refers to states that allow 529 withdrawals for K–12 education and offer a tax deduction. K–12 allowed refers to states that allow 529 withdrawals for K–12 education and do not offer a tax deduction. K–12 penalized refers to states where 529 withdrawals for K–12 education are penalized; penalties vary by state. All investors in this scenario are assumed to withdraw $10,000 each year for K–12 tuition. Tax savings are assumed to be reinvested with an income return of 3.41% and a capital return of 1.16%. Calculations are as of September 6, 2023.

Source: Vanguard.

How investors actually use 529s

In addition to assessing the potential benefits of 529s for hypothetical K–12 investors, we reviewed data to determine how real-life investors are actually using 529 accounts. To evaluate this, we focused on accounts with beneficiaries age 5–16 as a proxy for K–12 individuals.[7] We examined 10 state plans, which included investors in all 50 states, totaling $32 billion in assets across 1 million accounts. Account owners may have additional assets earmarked for education, but our analysis was isolated to 529 plan accounts.[8]

Within that group, our analysis focused on two types of investors:[9]

- **K–12 savers**, who made at least one qualified withdrawal in 2022, presumably to pay for K–12 tuition; and
- **College savers**, who did not make any withdrawals in 2022, presumably because they were saving for college.

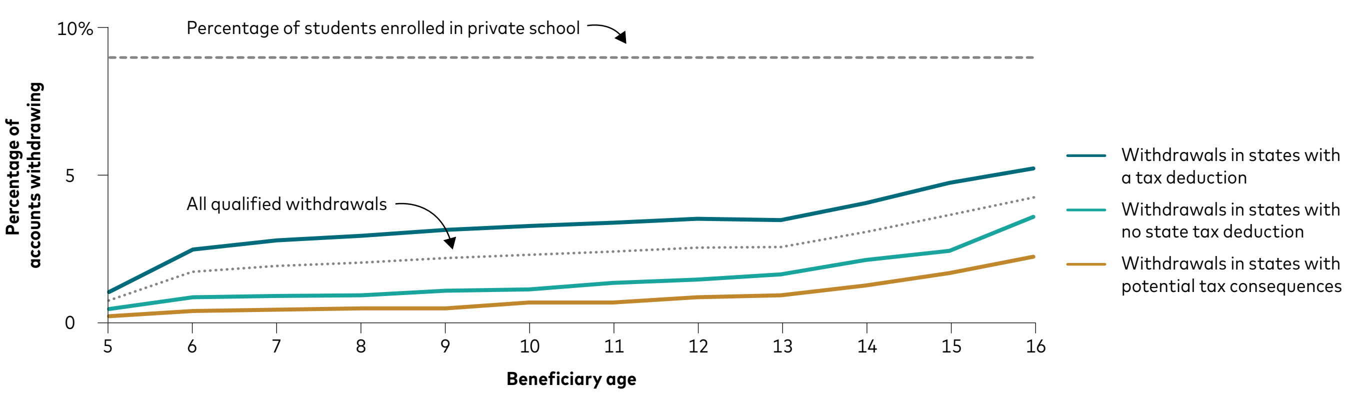
Using 529s for K–12 expenses

Since the expansion of the QTP in 2017, more accounts have made qualified withdrawals for beneficiaries age 16 or younger, a likely indicator that such withdrawals are for K–12 expenses. In 2017, prior to the tax law change, just 1.3% of accounts with beneficiaries age 5–17 made a withdrawal; in 2022, 2.8% of such accounts did. Although 2.8% is still a small portion of accounts, it is more than double the 2017 level. The majority of the 2022 withdrawals were qualified, suggesting they were used for K–12 tuition (Kahler et al., 2023).[10]

Figure 4 breaks down the percentage of accounts that made qualified K–12 withdrawals by beneficiary age. The percentage is higher among those residing in states that conform to federal legislation and offer tax deductions for contributions, and lower in those that don't. In states that impose a penalty on K–12 withdrawals and in those that do not offer a tax deduction for 529 contributions, only about 1% and 2%, respectively, of accounts made withdrawals in 2022.

FIGURE 4

Making withdrawals for K–12 tuition has increased, but many may still be missing out



Notes: Withdrawal data are for 2022. The percentage of students enrolled in private school is the average over the period from 2009 through 2019.

Sources: Vanguard calculations using Ascensus data as of December 31, 2022, and the National Center for Education Statistics.

7 Beneficiaries below age 5 and above age 17 are excluded from this analysis. Age 17 beneficiaries were excluded from this analysis to avoid potential overlap with individuals enrolled in college.

8 State plans analyzed include the Vanguard 529 College Savings Plan (administered by Nevada) and nine other plans for which Ascensus is the service manager and Vanguard is an investment manager. Account owners may have additional assets they intend to use for education, but our analysis is isolated to those in the 529 plan sample accounts. This means we cannot observe household behavior, such as parents saving for multiple children in the same household.

9 All analysis is at the account level and valid as of December 31, 2022, unless otherwise noted.

10 Note that these qualified-withdrawal data are for 529 accounts with beneficiaries age 5–17, whereas our analysis was limited to 529 accounts with beneficiaries age 5–16.

Higher withdrawal rates in states that offer tax deductions aligns with the idea that 529 account owners may see the pass-through benefit, rather than the opportunity for tax-deferred growth, as the primary draw of these accounts. The percentage of account owners who make withdrawals for K–12 tuition also increases as the beneficiary ages, which is consistent with more individuals using the account to pay for high school tuition.

However, all these withdrawal rates are low compared with the 9% of students enrolled in private school (National Center for Education Statistics, 2024). This gap suggests that many households saving for K–12 education may be missing out on potential tax benefits or, beyond that, an opportunity to invest.

Investing patterns of K–12 savers

While K–12 savers and college savers both set money aside for education, their accounts tend to look notably different, as shown in **Figure 5**. The median annual contribution for K–12 savers is 1.75 times higher than it is for college savers ($3,500 versus $2,000), but K–12 savers' median balance is just over half that of college savers ($7,500 versus $14,000).

The fact that the median withdrawal amount for K–12 savers ($4,300) is higher than the median contribution amount indicates that not all these investors are using the account solely as a pass-through. Instead, some are contributing to these accounts to take advantage of the opportunity for tax-deferred growth. However, the comparatively low account balances coupled with high withdrawal amounts could mean that some K–12 savers are using the accounts for short-term benefits, potentially at the expense of their longer-term college savings goals.

K–12 savers also tend to invest more conservatively than college savers, with lower allocations to equity and higher allocations to cash on average, which is appropriate based on their shorter investment horizon. While K–12 savers have higher cash allocations, over half of their assets are still allocated to equities on average, which could mean that investors are saving for both K–12 tuition in the short term and college in the long term.

FIGURE 5

K–12 savers have higher contributions but lower account balances than college savers

		K–12 savers	College savers
Median	Contributions (2022)	$3,500	$2,000
	Account balance	$7,500	$14,000
	Withdrawals (2022)	$4,300	$0
Asset allocation	Average equity allocation	53%	64%
	Average bond allocation	31%	31%
	Average cash allocation	17%	6%

Note: Asset allocation percentages do not total 100% due to rounding.
Sources: Vanguard, using data from Ascensus, as of December 31, 2022.

K–12 savers' college saving strategy

As discussed on the previous page, K–12 savers' low median account values paired with high contribution and withdrawal amounts suggest that many investors may be using these accounts as pass-through vehicles, while the asset allocations indicate that investors may also be using these accounts to pay for college. We hypothesized that these seemingly contradictory behaviors may be because the TCJA is still relatively new, with the change to QTP rules occurring a little over four years before this data was collected.

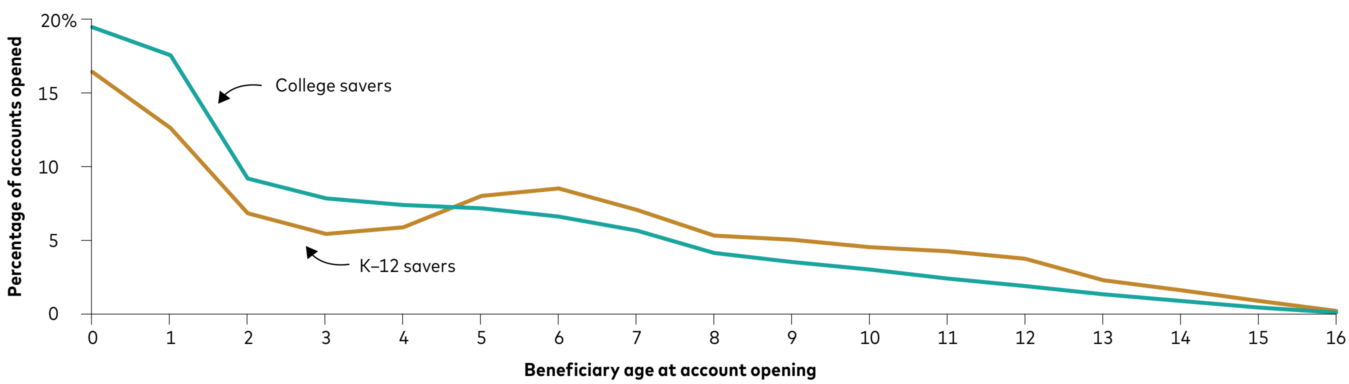
To explore this further, we took a deeper look at the age of the beneficiaries when the accounts were opened, the account balances in relation to beneficiary age, and the correlations between withdrawals and account balances and withdrawals and contributions in relation to beneficiary age.

On average, the younger the beneficiary is when an account is opened, the higher the balance when the beneficiary reaches college age, and, as previously stated, K–12 savers can benefit the most from using a 529 by saving early and taking advantage of tax-deferred growth (Kahler et al., 2023). Therefore, for K–12 savers to receive the maximum benefit, we would expect to see the majority of those accounts opened within the first few years of the beneficiary's birth.

In practice, as **Figure 6** shows, a higher proportion of college savers' accounts in our sample were opened before the beneficiary started kindergarten (that is, before age 5) compared with K–12 savers, and a higher proportion of K–12 savers' accounts were opened starting at age 5. Only 36% of K–12 saver accounts were opened when the beneficiary was age 2 or younger, compared with 46% of college saver accounts. While specific investor motivations are unknown, this most likely indicates that K–12 savers are opening accounts with the main goal of receiving a state tax deduction.

FIGURE 6

K–12 savers typically open accounts later than college savers



Sources: Vanguard, using data from Ascensus, as of December 31, 2022.

Figure 7a shows that the median account balance for K–12 savers is lower than that of college savers despite K–12 savers making higher contributions. While college savers generally see a steady increase in their balance—a result of both contributions and market return—K–12 savers see less consistent gains, with their account balances showing little growth between beneficiary ages 2 and 12.

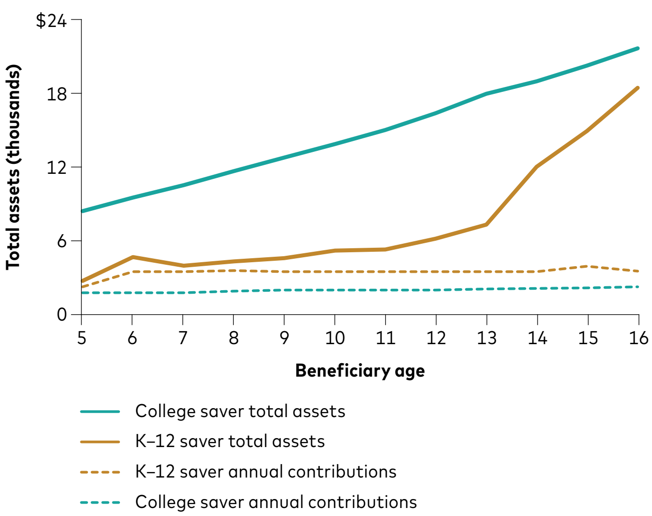
We see the difference in median account balances for K–12 savers and college savers narrow starting at beneficiary age 13, when the K–12 saver assets increase markedly. This may be because over half of K–12 savers with beneficiaries 13 or older opened their accounts prior to the tax law change in 2017, before withdrawals for K–12 tuition were allowed, and so these account owners were effectively forced to save until the TCJA was passed, resulting in higher account balances.

Figure 7b isolates for accounts opened post-TCJA, at which point we see that no such narrowing occurs. This further supports the theory that for many who opened accounts after the tax law change, the main goal was to obtain the state tax benefit. Furthermore, the narrow gap between college savers and K–12 savers at beneficiary ages 15 and 16 in Figure 7a shows that starting to invest early can help investors save for both K–12 and college more effectively.

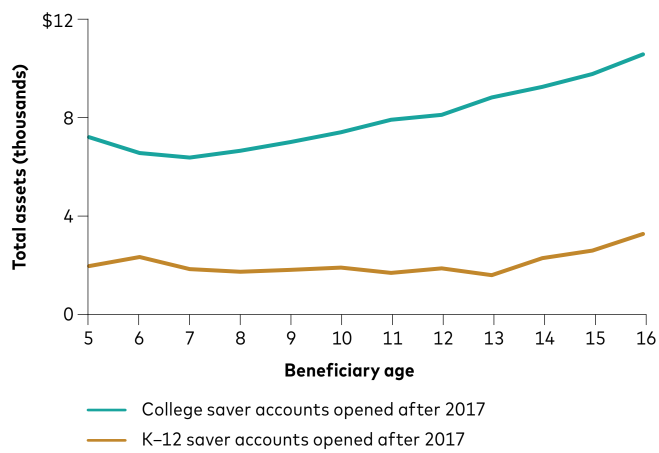
FIGURE 7

Median account balances by beneficiary age

a. K–12 savers trail college savers in 529 assets



b. K–12 savers appear less likely to use 529s as long-term investment vehicles



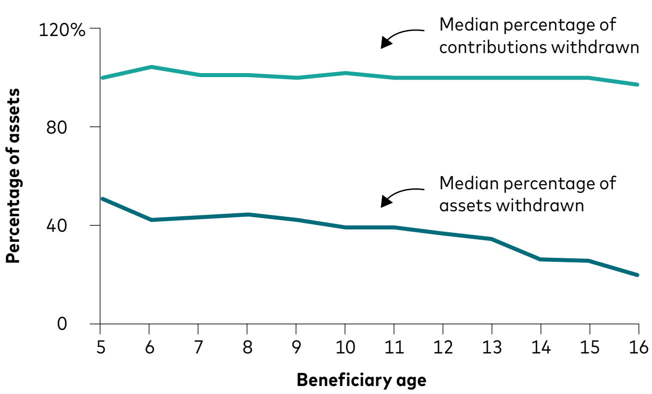
Sources: Vanguard, using data from Ascensus, as of December 31, 2022.

Figure 8 shows that, at the median, K–12 savers withdraw 100% of the assets they contribute in a given year.[11] Once again, this aligns with these investors using the account as a pass-through to obtain a tax deduction rather than investing for potential long-term growth.

While K–12 savers are withdrawing 100% of their contributions at the median, we do not see them withdrawing 100% of their account balances. K–12 savers with 5-year-old beneficiaries withdraw 51% of account assets at the median, and this percentage decreases as the beneficiary ages. By the time the beneficiaries reach age 16, the account owners withdraw only 20% of the account assets at the median, indicating many may have started saving in a 529, likely with the goal of saving for college, prior to making withdrawals for K–12 expenses. However, when we isolate accounts opened after the tax law change allowing for K–12 withdrawals, the percentage of assets remaining in the accounts decreases, indicating that this ratio may increase over time.

FIGURE 8

K–12 savers' contributions tend to match withdrawals each year, but they do not appear to be withdrawing their entire account balances



Note: The percentage of contributions withdrawn was calculated for individual investors by taking the total contribution amount for 2022 and dividing by the total amount withdrawn in 2022.

Sources: Vanguard, using data from Ascensus, as of December 31, 2022.

Structuring investments for K–12 savings goals

When we consider the typical 529 savings goal, Vanguard Target Enrollment Portfolios are our baseline glide-path option.[12] (Glide paths balance risk and growth appropriately over time.) These glide paths are optimized for college savers, with an allocation that gradually shifts from riskier assets to more stable ones over 18 years of accumulation and 4 years of spending. This reflects our baseline assumption that investors seek to grow their account balances from their beneficiary's birth through high school, and then withdraw assets over the next four years for college.

Compared with this baseline, K–12 savers have a shorter time frame for accumulating wealth as well as a potentially longer drawdown period, depending on how many years of K–12 education they are saving for. With this in mind, we analyzed how appropriate our baseline glide path is for K–12 savers.

To keep this analysis consistent with our typical college savings goal, we assumed an investor would select a Target Enrollment Portfolio with an enrollment year that aligned with the first year of the beneficiary's education and that they would remain invested in the same portfolio through its conversion into the Commencement Portfolio which remains at a static asset allocation that seeks to minimize risk.[13] Notably, this analysis focuses solely on saving for the K–12 goal, and does not assume any commingling of college savings with K–12 savings.

11 The percentage of contributions withdrawn was calculated for individual investors by taking the total contribution amount for 2022 and dividing by the total withdrawal amount.

12 For more information about Vanguard Target Enrollment Portfolios, please visit investor.vanguard.com/accounts-plans/529-plans/target-enrollment-portfolios.

13 The Commencement Portfolio allocates 11.6% to equities, 28.4% to fixed income, and 60% to cash.

In this study, we considered investors saving for K–12 (a 13-year drawdown), grades 5–12 (an 8-year drawdown), and high school (a 4-year drawdown). We also varied how many years in advance, or years to enrollment, the investor would have to save for these goals. For example, an investor who began saving for high school when the beneficiary was in grade 5 would have four years to enrollment.

To determine the value of a customized glide path over the baseline, we used the Vanguard Life-Cycle Investing Model (VLCM) to determine the optimal glide path for each case. We then compared each optimal glide path to the baseline and calculated the certainty fee equivalent (CFE)[14] of the optimal glide path's asset allocation (**Figure 9**).

We found, unsurprisingly, that our baseline guide path is most appropriate for investors with goals most similar in structure to the college savings goal. Those saving for high school only, particularly when they have more than five years until enrollment, and those saving for middle school and high school if they start early (when the beneficiary is age 2 or younger) receive glide-path options most similar to the baseline.

In the scenarios with longer drawdown periods, the optimal glide paths generally favor a slightly more aggressive portfolio allocation initially and through the beginning of the drawdown period to account for the longer drawdown time frame. Investors could achieve more appropriate exposure relatively simply. One option could be choosing a glide path with an enrollment date 2–6 years later than the beneficiary's actual enrollment date, while another option could be supplementing the baseline glide path with additional diversified equity exposure.

As these specific cases would entail a more customized asset allocation, investors would be wise to consider their personal circumstances and preferences when making this decision. The appropriate level of risk in an investor's portfolio should be informed by their capacity and tolerance for risk.

FIGURE 9

Certainty fee equivalent of customized glide-path solutions over baseline glide path (in basis points)

	Drawdown period (# years)		
Years to enrollment	**13 (K–12)**	**8 (grades 5–12)**	**4 (high school)**
3	26	16	11
4	27	17	**10**
5	28	18	14
6	X	16	**10**
7	X	13	**8**
8	X	**10**	**5**
9	X	**7**	**3**
10	X	**4**	**2**
11	X	X	**3**
12	X	X	**4**
13	X	X	**4**
14	X	X	**5**

Notes: Scenarios marked with a gray X were not considered in this research, as most 529 accounts are not opened until after the beneficiary is born. Scenarios with a CFE of 10 bps or less are marked in bold, indicating that the selected Target Enrollment Portfolio would be considered an appropriate investment option.

Source: Vanguard.

14 The CFE represents the fee, in basis points, that an investor would be willing to pay for a glide path optimized to their specific situation compared with the available glide path. (A basis point is one-hundredth of a percentage point.) For more information about CFEs, see Daga and Hassett (2023).

Conclusion

For investors planning to send their children to private school, using a 529 for K–12 tuition expenses can generate additional wealth through tax savings, particularly for those who start saving early and those who reside in states with favorable tax treatment for K–12 withdrawals.

While some investors are already taking advantage of the expanded use of 529 accounts in the wake of the TCJA, more work is needed to educate parents on the appropriate use of 529s for K–12 tuition, particularly as it relates to how they can maximize tax-deferred growth.

Although there are many benefits to using a 529 to pay for K–12 education, care should be taken to ensure parents are being encouraged to save for both K–12 and college expenses. Lower median balances for K–12 savers may indicate that these parents are not saving enough for college. Because tax-deferred growth is among the most valuable benefits of a 529, using the accounts to save for college should remain the priority as this goal has a longer time horizon and therefore can generally generate more additional wealth over time.

Lastly, when choosing investments for K–12 savings goals, Vanguard Target Enrollment Portfolios may be appropriate for investors who are saving for a shorter drawdown period, such as high school or high school and middle school, if they have a longer accumulation time frame. Investors with a longer drawdown period or a shorter accumulation time frame may want to consider a further-dated Vanguard Target Enrollment Portfolio or adding equity to their portfolio to allow for additional growth in the earlier years of the withdrawal period. Investors saving for college in addition to K–12 should consider investing assets meant for college in a separate Target Enrollment Portfolio that aligns with the year their beneficiary is expected to enter college.

Appendix 1

Additional wealth created over 18 years by using a 529, by state

This table shows the hypothetical additional wealth created for Profile A by using a 529 plan account. Savings are broken down into state tax savings (which can include savings from tax-deferred growth, tax deductions, and penalties), federal tax savings, and the growth of the tax savings, assuming they are reinvested at the same rate.

		Source of wealth creation			State tax treatment		
	Total additional wealth	State tax savings	Federal tax savings	Growth of tax savings	K–12 allowed with tax deduction	K–12 allowed	K–12 penalized
Alabama	$13,525	$6,500	$3,562	$3,462	✓		
Alaska	$4,859	—	$3,562	$1,296		✓	
Arizona	$7,948	$2,306	$3,562	$2,080	✓		
Arkansas	$12,136	$5,441	$3,562	$3,132	✓		
California	$4,202	–$505	$3,562	$1,145			✓
Colorado	$5,440	$0	$3,562	$1,877			✓
Connecticut	$14,598	$7,339	$3,562	$3,696	✓		
Delaware	$7,584	$1,995	$3,562	$2,026	✓		
District of Columbia	$19,380	$11,050	$3,562	$4,767	✓		
Florida	$4,859	—	$3,562	$1,296		✓	
Georgia	$14,355	$7,137	$3,562	$3,655	✓		
Hawaii	$4,672	–$35	$3,562	$1,236			✓
Idaho	$14,878	$7,540	$3,562	$3,776	✓		
Illinois	$6,263	$747	$3,562	$1,954			✓
Indiana	$35,524	$22,572	$3,562	$9,389	✓		
Iowa	$14,710	$7,410	$3,562	$3,737	✓		
Kansas	$14,573	$7,309	$3,562	$3,702	✓		
Kentucky	$5,865	$809	$3,562	$1,494		✓	
Louisiana	$5,927	$860	$3,562	$1,505		✓	
Maine	$8,358	$2,733	$3,562	$2,062	✓		
Maryland	$12,189	$5,511	$3,562	$3,116	✓		
Massachusetts	$8,543	$2,811	$3,562	$2,169	✓		
Michigan	$5,032	–$259	$3,562	$1,729			✓
Minnesota	–$539	–$4,424	$3,562	$323			✓
Mississippi	$13,015	$6,110	$3,562	$3,342	✓		
Missouri	$13,185	$6,240	$3,562	$3,383	✓		
Montana	$14,603	$7,312	$3,562	$3,729	✓		
Nebraska	$7,138	$1,343	$3,562	$2,232			✓
Nevada	$4,859	—	$3,562	$1,296		✓	
New Hampshire	$4,859	—	$3,562	$1,296		✓	
New Jersey	$5,668	—	$3,562	$2,105			✓

	Total additional wealth	Source of wealth creation State tax savings	Federal tax savings	Growth of tax savings	State tax treatment K–12 allowed with tax deduction	K–12 allowed	K–12 penalized
New Mexico	$12,839	$5,971	$3,562	$3,306	✓		
New York	$4,180	–$1,112	$3,562	$1,729			✓
North Carolina	$5,989	$910	$3,562	$1,516		✓	
North Dakota	$8,150	$2,436	$3,562	$2,151	✓		
Ohio	$9,166	$3,228	$3,562	$2,375	✓		
Oklahoma	$13,100	$6,175	$3,562	$3,363	✓		
Oregon	$7,716	$1,770	$3,562	$2,384			✓
Pennsylvania	$10,222	$3,991	$3,562	$2,669	✓		
Rhode Island	$7,206	$1,816	$3,562	$1,828	✓		
South Carolina	$15,420	$7,963	$3,562	$3,894	✓		
South Dakota	$4,859	—	$3,562	$1,296		✓	
Tennessee	$4,859	—	$3,562	$1,296		✓	
Texas	$4,859	—	$3,562	$1,296		✓	
Utah	$11,365	$4,888	$3,562	$2,914	✓		
Vermont	$6,685	$1,000	$3,562	$2,122			✓
Virginia	$11,869	$5,303	$3,562	$3,004	✓		
Washington	$4,859	—	$3,562	$1,296		✓	
West Virginia	$13,729	$6,656	$3,562	$3,510	✓		
Wisconsin	$12,355	$5,640	$3,562	$3,152	✓		
Wyoming	$4,859	—	$3,562	$1,296		✓	

Notes: Growth of tax savings assumes an average rate of return of 4.57%, which consists of a 3.41% income return and a 1.16% capital return. The average return rate is the median expected return of the Vanguard Target Enrollment Portfolio using equal-weighted aggregate returns over 18 years in initial conditions. K–12 allowed with tax deduction refers to states that allow 529 withdrawals for K–12 education and offer a tax deduction. K–12 allowed refers to states that allow 529 withdrawals for K–12 education and do not offer a tax deduction. K–12 penalized refers to states where 529 withdrawals for K–12 education are penalized; penalties vary by state. Numbers may be rounded. Calculations are as of September 6, 2023.

Source: Vanguard.

Appendix 2

Additional wealth created by using a 529 for saving versus as a pass-through

This table shows the additional wealth generated for Profile A investors if they start saving for K–12 expenses when the beneficiary is born compared with if they use the account solely as a pass-through to receive the state tax deduction. Only states where there is a pass-through benefit are shown.

Additional wealth created

	Accounts that start contributing at beneficiary's birth	Accounts used for pass-through only
Alabama	$13,525	$6,500
Arizona	$7,948	$1,300
Arkansas	$12,136	$5,720
Connecticut	$14,598	$7,150
Georgia	$14,355	$5,710
District of Columbia	$19,380	$8,840
Idaho	$14,878	$7,540
Indiana	$35,524	$19,500
Iowa	$14,710	$5,969
Kansas	$14,573	$4,446
Maine	$8,358	$930
Maryland	$12,189	$3,250
Massachusetts	$8,543	$1,300
Mississippi	$13,015	$6,110
Missouri	$13,185	$6,240
Montana	$14,603	$4,602
New Mexico	$12,839	$6,370
North Dakota	$8,150	$2,535
Ohio	$9,166	$1,820
Oklahoma	$13,100	$6,175
Pennsylvania	$10,222	$3,991
Rhode Island	$7,206	$618
South Carolina	$15,420	$8,320
Utah	$11,365	$2,851
Virginia	$11,869	$2,990
West Virginia	$13,729	$6,656

Notes: Additional wealth is defined as the amount an investor can generate by using a 529 over a taxable brokerage account. All investors in this scenario are assumed to withdraw $10,000 each year for K–12 tuition. Investors who are using the account solely as a pass-through for tax purposes are assumed to contribute $10,000 and immediately withdraw the funds, so no investment growth is assumed. Tax savings are assumed to be reinvested with an income return of 3.41% and a capital return of 1.16%. Calculations are as of September 6, 2023.

Source: Vanguard.

Appendix 3

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.

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 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 VCMM 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.

Appendix 4

The Vanguard Life-Cycle Investing Model

The VLCM is designed to identify the product design that represents the best investment solution for a theoretical, representative investor who uses the target-date funds to accumulate wealth for retirement. The VLCM generates an optimal custom glide path for a participant population by assessing the trade-offs between the expected (median) wealth accumulation and the uncertainty about that wealth outcome for thousands of potential glide paths. The VLCM does this by combining two set of inputs: the asset class return projections from the VCMM and the average characteristics of the participant population. Along with the optimal custom glide path, the VLCM generates a wide range of portfolio metrics such as a distribution of potential wealth accumulation outcomes, risk and return distributions for the asset allocation, and probability of ruin, such as the odds of participants depleting their wealth by age 95.

The VLCM inherits the distributional forecasting framework of the VCMM and applies to it the calculation of wealth outcomes from any given portfolio.

The most impactful drivers of glide-path changes within the VLCM tend to be risk aversion, the presence of a defined benefit plan, retirement age, savings rate, and starting compensation. The VLCM chooses among glide paths by scoring them according to the utility function described and choosing the one with the highest score. The VLCM does not optimize the levels of spending and contribution rates. Rather, the VLCM optimizes the glide path for a given customizable level of spending, growth rate of contributions, and other plan sponsor characteristics.

A full dynamic stochastic life-cycle model, including optimization of a savings strategy and dynamic spending in retirement, is beyond the scope of this framework.

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All investing is subject to risk, including possible loss of principal.

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.

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. State tax treatment of withdrawals used for i) expenses for tuition in connection with enrollment or attendance at an elementary or secondary public, private, or religious school, ii) expenses related to apprenticeship programs, or iii) student loan repayments is determined by the state(s) where the taxpayer files state income tax. Please consult with a tax advisor for further guidance.

Keep in mind that state-based benefits should be one of many appropriately weighted factors to be considered when making an investment decision.

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