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# Assessing endowment performance: The enduring role of low-cost investing

Vanguard research

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**Executive summary.** To many observers, endowments represent the pinnacle of investment success. Prominent endowments continue to make headlines with their remarkable performance and sophisticated strategies, leaving many investors eager to replicate their achievements. But how well have they actually performed?

Over the years, many endowments have shifted away from long-only, public investments toward illiquid alternatives. Once, a balanced portfolio consisting of 60% stocks and 40% bonds was the norm. Increasingly, however, institutions have gravitated toward reducing their public holdings and replacing them with hedge funds, private equity, and real assets. The largest portfolios now average more than 60% alternatives.<sup>1</sup> As a result, endowments have become synonymous with the use of alternative investments. Now, 25 years after this shift first began, we examine how endowments have performed.

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<sup>1</sup> National Association of College and University Business Officers (NACUBO), 2011. For the purposes of this paper, alternative investments refer to private, largely illiquid investments such as hedge funds, private equity, and private real assets.

We do so by both examining average endowment results and deconstructing performance by endowment size. We then compare the results of each size cohort to public mutual fund investments over multiple time periods.

We find that although the average large endowment, with more than \$1 billion in assets, has performed remarkably well in comparison with the broad public markets, this category represents only a small portion of all endowments—in fact, less than 10%. In contrast, the remaining 91%, with average assets of less than \$1 billion, have performed more modestly. This holds true even for the most recent five- and ten-year periods, when the use of alternatives was greatest. We observe that the largest endowments have distinct operational advantages, making it quite a challenge to replicate their top performance. Accordingly, our analysis shows that the majority of endowments would have been better off had they simply invested in low-cost, diversified, transparent public funds.

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### Endowment performance has captured attention

The perception of many investors is that endowments have performed strongly since some started increasing their exposure to alternatives in the mid-1980s. As evidence, these observers often cite the tremendous success of institutions such as Yale University, which earned 13.4% annually over the past 25 years, and Harvard University, which earned 12.0%, while the broad equity market was returning only 8.9%.<sup>2</sup> However, as **Figure 1** illustrates, over the past 25 years, average endowment performance has actually been quite mixed, with balanced benchmarks producing the best returns in three of the five periods studied.

Furthermore, if we presume it would cost an investor 20 basis points to track the benchmark through an index fund, then the benchmark returns would become 5.1%, 5.4%, 6.7%, 8.0%, and 8.4%. Comparing these after-cost results with the average endowment and average active balanced fund returns in Figure 1, we find that the endowments' performance equaled or bettered those of active balanced funds and the 60% stock/40% bond index for the past 25-, 20-, and 15-year periods. During the more recent periods of five and ten years, when the use of alternatives was greatest, endowments' performance was weaker.

*Notes on risk: All investing is subject to risk, including the possible loss of the money you invest. Be aware that fluctuations in the financial markets and other factors may cause declines in the value of your account. There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income. Bond funds are subject to the risk that an issuer will fail to make payments on time, and that bond prices will decline because of rising interest rates or negative perceptions of an issuer's ability to make payments. Diversification does not ensure a profit or protect against a loss in a declining market. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.*

<sup>2</sup> The Yale Endowment Annual Report, 2011; Harvard Management Company Endowment Report, 2011.

**Figure 1.** Performance of endowments versus active balanced funds and a 60% stock/40% bond benchmark

Average annualized returns, fiscal years ended June 30, 2011	5 years	10 years	15 years	20 years	25 years
Average endowment	4.2%	5.3%	7.3%	8.4%	8.5%
Average active balanced fund	4.2	4.3	6.2	7.7	7.8
60% stock/40% bond benchmark	5.3	5.6	6.9	8.2	8.6

Notes: The average endowment and average active balanced fund returns are all net of fees. The 60% stock/40% bond benchmark represents the approximate average asset allocation of active balanced funds. It is composed of 42% U.S. stock market (Wilshire 5000 Total Market Index through April 22, 2005, and MSCI US Broad Market Index thereafter), 18% MSCI World Index ex-US, and 40% Barclays Aggregate Bond Index. Its returns are gross of fees. Average active balanced fund performance is measured for all existing funds at the start of each period; an equal weighted average is calculated each year. For any funds that were subsequently merged or liquidated, we included their performance data up to the point of the merger or liquidation. See Appendix A-1 for details on calculation of endowment returns. Population sizes for the active balanced funds over the 5-, 10-, 15-, 20-, and 25-year periods are 448, 340, 206, 85, and 49 funds, respectively.

Past performance is not a guarantee of future results.

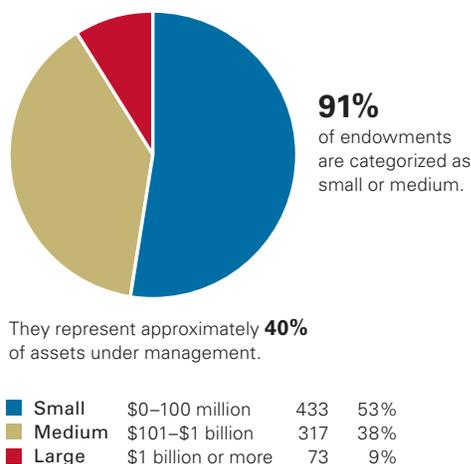
Sources: Vanguard calculations using data from Morningstar, Inc., and NACUBO.

### Largest endowments have driven success

If we evaluate performance by endowment size, we find the results even more revealing. As shown in Figure 2, endowments can be grouped into three different size cohorts: large (assets of \$1 billion or more) medium (more than \$100 million and less than \$1 billion), and small (less than \$100 million).

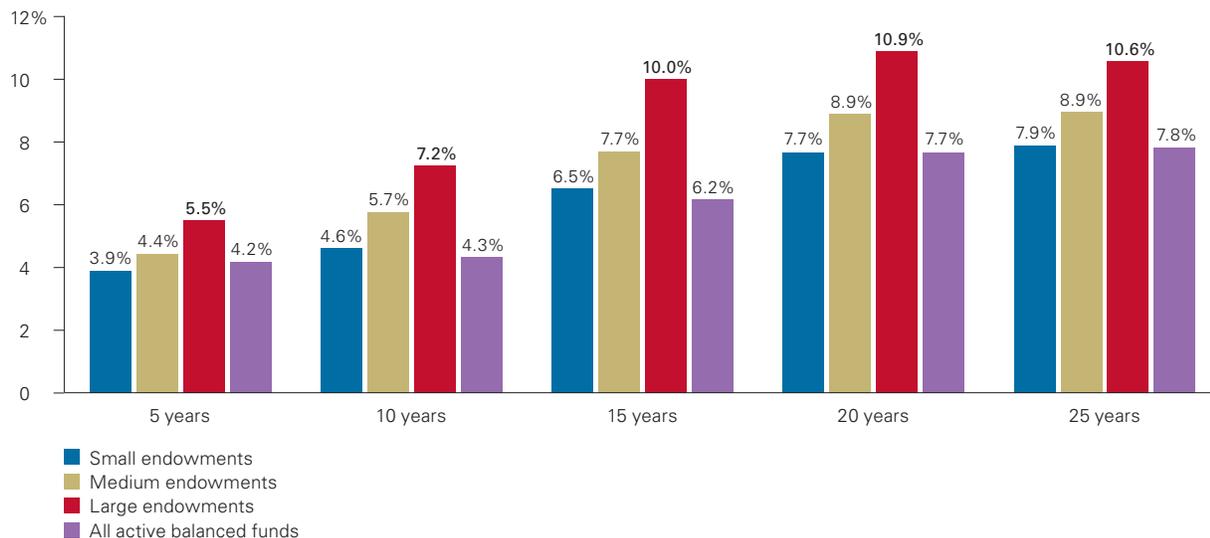
Figure 3, on page 4, illustrates the performance of each cohort over 5, 10, 15, 20, and 25 years, all ending June 30, 2011. The analysis shows that the largest endowments performed extremely well over all periods covered. But medium and small endowments performed more modestly. Depending on the period, medium endowments underperformed large endowments by between 1.1% and 2.3% annually, and small endowments underperformed by between 1.6% and 3.2%.

**Figure 2.** Endowments by size cohort



Source: Small, medium, and large cohorts compiled by Vanguard using the 2009–2011 NACUBO-Commonfund Study of Endowments.

**Figure 3.** Annualized returns of endowments by size cohort versus active balanced funds



Note: All data for fiscal years ended June 30, 2011.

Sources: Vanguard calculations using data from Morningstar, Inc., NACUBO Endowment Study (1987–2009), and NACUBO-Commonfund Study of Endowments (2009–2011).

### Performance of large endowments equals that of top active balanced funds

While large, billion-dollar endowments have done well, they account for only 9% of all endowments. If we compare them with the top 10% best-performing active balanced mutual funds, the results are actually quite similar. Over the five periods covered in our analysis, the average difference in annualized returns between the two was only 0.14%.<sup>3</sup>

Although this comparison is meaningful in highlighting the ability of both endowments and public mutual funds to perform well, it is not meant to suggest that the solution for investors is to simply pick the best-performing mutual funds and expect them to match the top endowments. On the contrary, because the probability of selecting the very best

mutual funds ahead of time is so low,<sup>4</sup> these results underline how well the top endowments have performed.

### Operational differences

What has contributed to the success of the top 9% of endowments? We have observed three key operational factors:

- Investment expertise.** The largest endowments have over time developed a distinct depth of expertise, particularly regarding alternatives. The average large endowment has a staff size of ten investment professionals. The ten largest endowments have made an even bigger commitment to expertise, with an average staff size of 25 investment professionals.<sup>5</sup>

<sup>3</sup> For the five periods covered (5, 10, 15, 20, and 25 years), the top active balanced funds returned 7.0%, 7.3%, 9.4%, 10.8%, and 10.4%, respectively. For the same periods, the average large endowment returned 5.5%, 7.2%, 10.0%, 10.9%, and 10.6%.

<sup>4</sup> For more information on the difficulty of selecting active managers, see *The Case for Indexing* (Philips, 2012).

<sup>5</sup> Sources: NACUBO, 2011, and Vanguard research.

- **Pricing power.** Larger endowments are able to commit significant capital to an investment manager. In combination with their long-developed expertise, this gives them a strong position in negotiating fees. Indeed, some of the top endowment managers say that high fees alone are a reason to avoid some funds, implying that if an investment cannot be obtained at a reasonable price, it is not worth investing in.<sup>6</sup>
- **Direct investments.** The largest endowments are twice as likely as small ones to invest in alternative strategies directly. On average, they do so 96% of the time, working directly with the investment manager of their choice instead of through a fund of funds or some other third party. By contrast, the average small endowment currently invests 50% of its alternative assets directly and 50% in funds of funds,<sup>7</sup> which can lead to an additional layer of fees and become a significant drag on fund performance.

Over time, most of the largest endowments have used these distinctive factors to achieve very good results. This has led some to conclude that their approach to investing is not easy to replicate without commensurate resources and expertise. With this in mind, is there another way to find investment success?

### Low-cost mutual funds outperformed most endowments

As previous Vanguard research has determined, low cost is one of the most crucial factors in long-term investment success and can be identified in advance (Wallick, 2011). When we compared the lowest-cost active balanced funds with the endowment size cohorts, we found that the balanced funds outperformed a majority of the time.

While the large endowments did relatively well, the performance of the average medium (39% of the total) and small (53%) endowments was less notable. For the five periods covered, the low-cost funds outperformed small endowments every time and medium endowments in three of the five periods. **Figure 4**, on page 6, illustrates these results.

### Risk-adjusted return analysis

Although the return comparison in Figure 4 tells a compelling story, many institutions prefer to consider risk-adjusted return, or how much risk is necessary to achieve a certain level of return. Using a Sharpe ratio<sup>8</sup> analysis, we found that over the past 25 years, in each period covered, low-cost active balanced funds consistently outperformed (i.e., had a better Sharpe ratio than) medium and small endowments. As illustrated in **Figure 5**, on page 6, the ratios for low-cost active balanced funds were from 0.01 to 0.09 better than those for medium endowments and 0.08 to 0.17 better than those for small endowments, depending on the period.

### Is it just a matter of adding more alternatives?

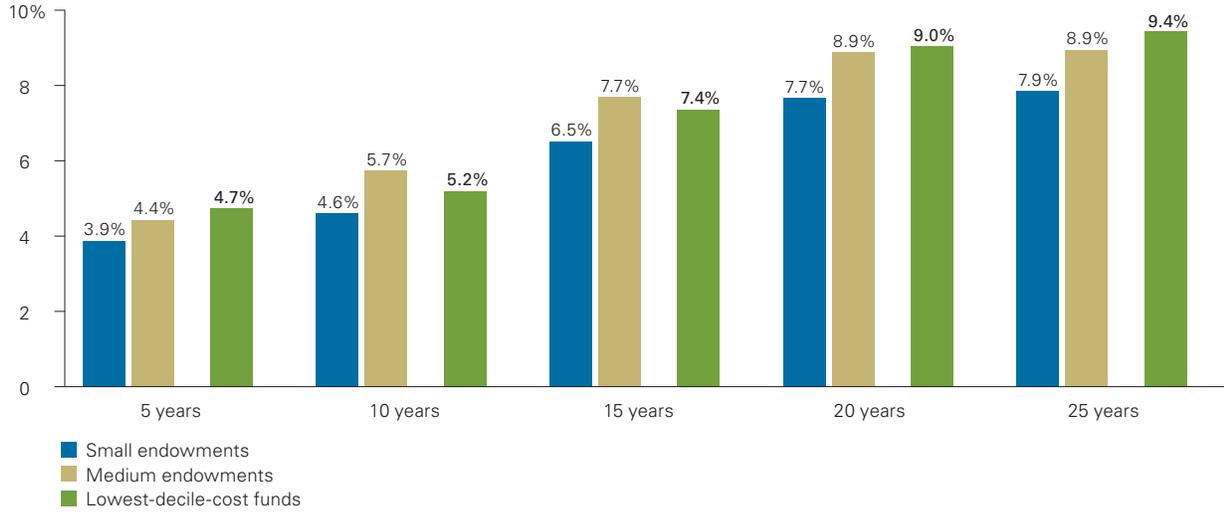
Some observers might look at this analysis and suggest that the main difference between the large endowments and the others is the amount of alternatives they have in their portfolios. This line of thought implies that if the smaller endowments just added more alternative investments, their performance would improve. While on the surface some evidence would seem to support this theory, in the end it does not hold up to scrutiny.

<sup>6</sup> For more on this topic, see *Pension Fund Performance and Costs: Small Is Beautiful* (Bauer, Cremers, and Frehen, 2010), *CIOs at CalPERS, 3 Other Institutions Play Hardball with Fees* (Williamson, 2012), and David F. Swenson's quote in "For Yale's Money Man, a Higher Calling" (*The New York Times*, 2007).

<sup>7</sup> Source: NACUBO, 2011.

<sup>8</sup> The Sharpe ratio measures an investment's excess returns per unit of risk and can be useful when comparing the performance of two portfolios with different asset allocations.

**Figure 4.** Annualized returns of low-cost active balanced funds versus medium and small endowments

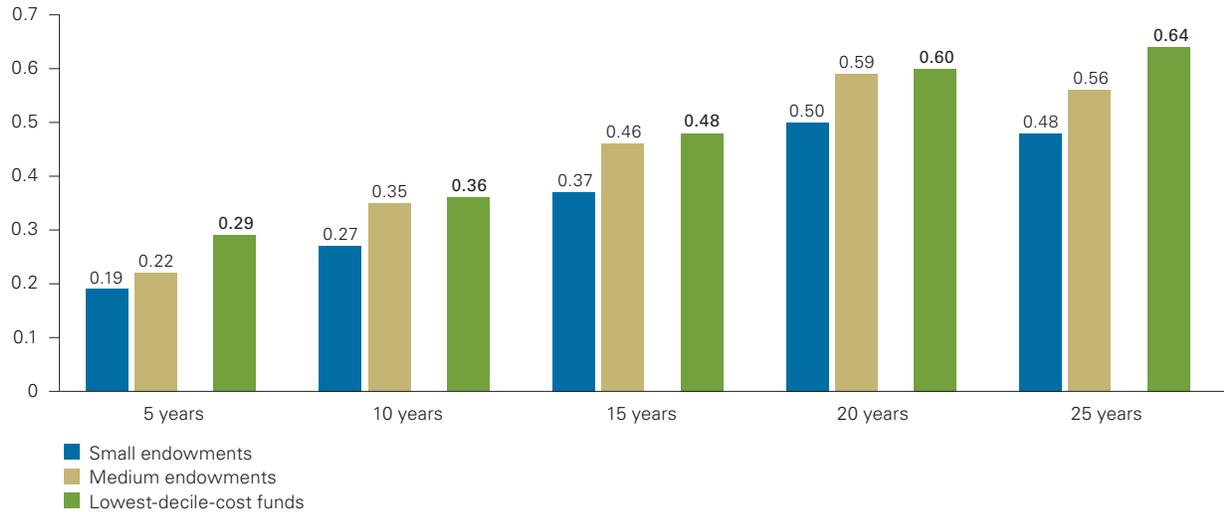


Notes: All data for fiscal years ended June 30, 2011. Lowest-decile-cost funds were determined using end-of-period Morningstar expense ratio data. Beginning-period expense ratios were similar. Population sizes for the lowest-decile-cost funds for the 5-, 10-, 15-, 20-, and 25-year periods were 45, 34, 21, 9, and 5 funds, respectively. Results for the 60% stock/40% bond benchmark index were 5.3%, 5.6%, 6.9%, 8.2%, and 8.6%, respectively.

Sources: Vanguard calculations using data from Morningstar, Inc., NACUBO Endowment Study (1987–2009), and NACUBO-Commonfund Study of Endowments (2009–2011).

**Figure 5.** Sharpe ratios of low-cost active balanced funds versus medium and small endowments

Sharpe ratios (using annual data)



Notes: Annual data for fiscal years ended June 30, 2011. Based on data availability, the Sharpe ratios for the small and medium endowments were calculated using category summary data, not an average of individual endowments within the categories. Results for the 60% stock/40% bond benchmark index for the 5-, 10-, 15-, 20-, and 25-year periods were 0.29, 0.37, 0.41, 0.55, and 0.54, respectively.

Sources: Vanguard calculations using data from Morningstar, Inc., NACUBO Endowment Study (1987–2009), and NACUBO-Commonfund Study of Endowments (2009–2011).

Using data from the NACUBO-Commonfund Study of Endowments and from several individual universities, we can see that the use of alternatives has increased over time. Many of the largest endowments began to transition into alternatives 20 to 25 years ago. Over the past ten years, smaller endowments have followed suit, and many now have sizable allocations to alternatives.

Publicly available asset allocation data summarized by size cohort are available for periods beginning in 2002.<sup>9</sup> Reviewing this data, we found that large endowments have, on average, increased their alternatives allocation from 28% to 60%, medium endowments from 13% to 37%, and small endowments from 4% to 17%. These figures do show that small and medium endowments have more modest allocations to alternatives. However, the implication that simply increasing this allocation would improve performance is not supported for several reasons.

First, as mentioned previously, large endowments have several significant advantages when investing in alternatives. Their lengthy experience and sizable assets under management have likely been primary drivers of their success, enabling them to build up large in-house staffs that have both significant expertise and strong pricing power. Without these advantages, small and medium endowments may find the investment process more challenging.

Second, manager selection is also extremely important. Because alternatives have no broad market cap index and their performance differs vastly by fund, their contribution is highly dependent on the endowment's choice of manager. Large endowments, due to their size and first-mover advantage, have greater access to the best managers, who are more likely to outperform.

Third, if merely adding alternatives did indeed boost performance, then we should see two relationships prominently visible in the data: (1) The average

overall returns of any group of endowments with an allocation to alternatives should outperform publicly available mutual funds, and (2) The average risk-adjusted performance of small and medium endowments (as measured by the Sharpe ratio) should exceed that of publicly available mutual funds, especially for the last five- and ten-year periods, when their exposure to alternatives has been at its highest. If alternatives are consistently superior to public funds, then medium endowments with a 37% allocation to alternatives and even small endowments with 17% should have outperformed public investments. This, however, was not the case.

Small and medium endowments failed to meaningfully outperform public investments on either an absolute or risk-adjusted basis. While it is difficult to quantify exactly what drives individual endowment performance,<sup>10</sup> our research demonstrates that it is not simply the amount of alternatives a portfolio contains. Other factors, such as fund size and staff expertise, may well influence an endowment's ability to access and select the best managers and negotiate reasonable fees, all of which could affect bottom-line performance.

## Conclusion

Our analysis of endowment investment performance found that results differed distinctly depending on endowment size. The largest, those with assets of \$1 billion or more, performed very well over the past two-and-a-half decades. Perhaps as a result of this success, they garnered an outsized portion of publicity. In fact, from 2009 through 2011, an investor was nearly ten times more likely to see a story regarding one of the ten largest endowments than to read about those of any other size.<sup>11</sup> Therefore, it is not surprising that many market watchers regard endowments as the pinnacle of investment success. In reality, as our analysis in this paper shows, the largest 9% of endowments have done extremely well, but the average performance of the remaining 91% has been modest in comparison to low-cost mutual funds.

<sup>9</sup> See **Appendix A-2** for details.

<sup>10</sup> See *Secrets of the Academy: The Drivers of University Endowment Success* (Lerner, Schoar, and Wang, 2007) for further discussion.

<sup>11</sup> Calculated using Google search results data for the period January 1, 2009, through December 31, 2011.

In conclusion, we found that for the period studied, the average small or medium endowment may have been better served by a portfolio of low-cost, transparent, diversified funds invested in traditional stocks and bonds.

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## Appendix A-1. Calculation of endowment returns

Size ranges:	Small endowments	Medium endowments	Large endowments
Through 1982	< \$10 million	\$10–\$50 million	> \$50 million
Through 1987	< \$25 million	\$25–\$100 million	> \$100 million
Through 1997	< \$25 million	\$25–\$400 million	> \$400 million
Through 1999	< \$75 million	\$75 million–\$1 billion	> \$1 billion
Thereafter	< \$100 million	\$100 million–\$1 billion	> \$1 billion

Notes: Individual-year returns were calculated by NACUBO-Commonfund on an asset-weighted basis within subcategories defined by fund sizes. Vanguard compiled the individual returns in each subcategory for each of the last 25 years. We then combined the subcategories into broader cohorts we labeled "large," "medium," and "small," using fund count weighting to calculate the average returns in each year for each cohort.

Sources: Vanguard calculations using data from NACUBO-Commonfund.

**Appendix A-2. Endowment asset allocation data**

**a. Large**

Year	Equity	Fixed income	Alternatives*	Short-term/cash/other
2002	49%	21%	28%	2%
2003	49	19	30	3
2004	50	15	31	3
2005	49	14	34	2
2006	49	13	36	2
2007	52	11	35	2
2008	46	11	42	2
2009	26	10	61	3
2010	26	10	60	4
2011	28	9	60	3

**b. Medium**

Year	Equity	Fixed income	Alternatives*	Short-term/cash/other
2002	60%	24%	13%	3%
2003	59	23	14	4
2004	62	19	16	4
2005	60	18	18	4
2006	60	16	20	4
2007	59	15	22	4
2008	53	16	27	4
2009	42	16	35	7
2010	40	16	37	6
2011	43	14	37	5

**c. Small**

Year	Equity	Fixed income	Alternatives*	Short-term/cash/other
2002	61%	29%	4%	6%
2003	61	28	4	7
2004	64	25	5	6
2005	64	24	6	6
2006	63	24	7	6
2007	64	22	8	6
2008	59	23	11	7
2009	51	24	17	7
2010	51	24	18	7
2011	53	22	17	8

\*Alternative strategies are defined as: Private equity (leveraged buyouts, mezzanine, merger-and-acquisition funds, and international private equity); marketable alternative strategies (hedge funds, absolute return, market-neutral, long/short, 130/30, event-driven, and derivatives); venture capital; private equity real estate (non-campus); energy and natural resources (oil, gas, timber, commodities, and managed futures); and distressed debt. On-campus real estate is included in short-term securities/cash/other.

Notes: Asset allocation data by fund size is publicly available for periods beginning in 2002. We used NACUBO-Commonfund's dollar-weighted average from its reported data. When combining data for subcategories into the broader Vanguard categories (small, medium, and large), we used fund count weighting because a dollar-weighted average was not possible given the data available.

Sources: Vanguard calculations using data from NACUBO-Commonfund.



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