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# Morningstar's U.S. Active/Passive Barometer

## Year-End 2022

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### Executive Summary

The Morningstar Active/Passive Barometer is a semiannual report that measures the performance of active funds against passive peers in their respective Morningstar Categories. The U.S. Active/Passive Barometer spans nearly 8,300 unique funds that accounted for approximately \$15.7 trillion in assets, or about 64.9% of the U.S. fund market, as of the end of 2022.

The Active/Passive Barometer measures active managers' success in several unique ways:

- ▶ It evaluates active funds against a composite of passive funds. In this way, the "benchmark" reflects the actual, net-of-fees performance of investable passive funds.
- ▶ It considers how the average dollar invested in active funds has fared versus the average dollar invested in passive funds.
- ▶ It examines trends in active-fund success by fee level.
- ▶ It shows the distribution of surviving active funds' excess returns versus their average passive peer to help investors understand not just the odds of picking a successful manager but also the prospective payout or penalty.

The Active/Passive Barometer is a useful measuring stick that helps investors calibrate the odds of succeeding with active funds in different categories.

### Key Takeaways

- ▶ A dreadful year for stocks and bonds tested the conventional wisdom that active funds navigate difficult markets better than their passive peers. Overall, active funds did little to affirm the validity of that narrative in 2022: 43% of the active funds across the 20 Morningstar Categories included in our analysis both survived and outperformed their average passive peer.
- ▶ Active funds' 43% success rate was a decline from their 47% clip in 2021. In 2022, U.S. stock funds led the charge for active managers, while active managers of fixed-income and real estate funds saw significant declines in year-over-year success rates.
- ▶ U.S. stock-pickers' one-year success rate was 49% in 2022, an improvement on their 2021 mark of 43%. Active small-cap funds paved the way, with success rates of 57%, while large caps' and mid-caps' 47% and 46% success rate, respectively, weighed on the overall rate of success of U.S. active stock managers.
- ▶ The year 2022 was unkind to active foreign stock funds. Active managers' success rates declined in five of six categories that we examined and translated into a combined 34% one-year success rate—3 percentage points worse than their 2021 clip.
- ▶ Historically more conducive to active management, fixed-income markets punished active strategies in 2022. Only 30% of active managers across the three fixed-income categories survived and beat their average passive peer, a 42-percentage-point drop from 2021 to 2022. Active managers had a tougher time in corporate bonds (23% success rate) than intermediate-core bonds (38%).
- ▶ In general, actively managed funds have failed to survive and beat their average passive peer, especially over longer time horizons; one out of every four active funds topped the average of their passive rivals over the 10-year period ended December 2022. Long-term success rates were generally highest among real estate and bond funds and lowest among U.S. large-cap funds.
- ▶ The distribution of 10-year excess returns for surviving active funds versus the average of their passive peers varies widely across categories. In the case of U.S. large-cap funds, it skews negative, indicating that the likelihood and performance penalty for picking an underperforming manager tends to be greater than the probability and reward for finding a winner. The inverse tends to be true of the fixed-income, real estate, and certain foreign-stock categories we examined, where excess returns among surviving active managers skewed positive over the past decade.
- ▶ Over the past 10 years, the average dollar invested in active funds outperformed the average active fund in 18 of the 20 categories examined and 13 of the 13 U.S. categories; this implies that investors have favored cheaper, higher-quality funds (see Exhibit 4).
- ▶ The cheapest funds succeeded over twice as often as the priciest ones (36% success rate versus 16% success rate) over the 10-year period ended December 2022. This not only reflects cost advantages but also differences in survival, as 67% of the cheapest funds survived, while 59% of the most expensive did so. Cheap funds tend to hold the greatest advantage over expensive funds in market segments with relatively high fees.

**Exhibit 1** Active Funds' Success Rate by Category (%)

Category	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year	10-Year (Lowest Cost) *	10-Year (Highest Cost)
U.S. Large Blend	54.1	38.1	30.1	13.1	9.3	8.7	25.7	6.7
U.S. Large Value	47.2	41.5	30.9	11.4	10.9	19.5	20.3	3.3
U.S. Large Growth	37.5	23.4	21.6	7.0	3.0	4.7	15.3	1.1
U.S. Mid Blend	50.5	46.5	31.6	18.1	10.6	12.7	31.8	0.0
U.S. Mid Value	39.6	50.5	31.5	4.6	17.2	—	4.8	0.0
U.S. Mid Growth	46.5	47.7	60.1	39.8	23.3	—	47.7	25.0
U.S. Small Blend	52.9	52.6	34.7	27.2	23.5	19.8	47.2	21.1
U.S. Small Value	61.0	44.2	43.8	32.7	15.8	22.1	40.0	19.0
U.S. Small Growth	56.9	50.3	57.6	46.4	26.6	—	48.7	43.9
Foreign Large Blend	36.8	43.6	31.5	29.9	24.1	18.9	42.4	27.8
Foreign Large Value	29.4	46.6	14.6	17.2	17.9	—	26.3	0.0
Foreign Small-Mid Blend	44.0	37.5	36.4	41.7	—	—	60.0	33.3
World Large-Blend	56.0	31.8	22.1	22.8	—	—	16.7	16.7
Diversified Emerging Markets	23.4	32.9	26.2	32.7	38.4	—	55.2	35.5
Europe Stock	25.0	47.1	25.0	38.1	40.9	15.7	75.0	20.0
U.S. Real Estate	42.9	74.2	62.7	52.3	25.7	23.6	58.3	35.7
Global Real Estate	20.0	69.8	63.8	56.9	—	—	62.5	45.5
Intermediate Core Bond	37.9	57.1	38.7	35.8	23.0	16.1	60.0	19.4
Corporate Bond	22.6	32.1	25.0	53.5	—	—	50.0	44.4
High-Yield Bond	27.2	42.6	47.4	49.4	—	—	70.4	16.7

Source: Morningstar. Data and calculations as of Dec. 31, 2022. \*Green/red shading indicates that active funds in this fee quintile had above/below-average success rates.

**Exhibit 2** Year-Over-Year Change in Active Funds' One-Year Success Rate by Category (%)

	2022	2021	Year-Over-Year Change
U.S. Large Blend	54.1	45.5	8.7
U.S. Large Value	47.2	38.4	8.8
U.S. Large Growth	37.5	32.2	5.3
U.S. Mid Blend	50.5	66.0	-15.6
U.S. Mid Value	39.6	30.8	8.8
U.S. Mid Growth	46.5	46.9	-0.4
U.S. Small Blend	52.9	59.2	-6.3
U.S. Small Value	61.0	38.8	22.2
U.S. Small Growth	56.9	47.4	9.5
Foreign Large Blend	36.8	44.0	-7.1
Foreign Large Value	29.4	31.2	-1.8
Foreign Small-Mid Blend	44.0	48.1	-4.1
World Large-Blend	56.0	38.5	17.5
Diversified Emerging Markets	23.4	30.9	-7.5
Europe Stock	25.0	46.7	-21.7
U.S. Real Estate	42.9	82.5	-39.6
Global Real Estate	20.0	83.3	-63.3
Intermediate Core Bond	37.9	70.1	-32.2
Corporate Bond	22.6	66.7	-44.0
High-Yield Bond	27.2	75.8	-48.6

Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 3** Trends in Active Funds' One-Year Success Rates by Category (%)

	2016		2017		2018		2019		2020		2021		2022		Trend
	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	
U.S. Large Blend	18.9	22.4	42.2	36.0	34.4	28.3	33.0	40.1	38.5	34.0	48.1	45.5	44.0	54.1	
U.S. Large Value	13.5	20.4	58.7	33.7	33.0	29.0	33.9	37.7	41.8	51.3	48.4	38.4	34.5	47.2	
U.S. Large Growth	21.5	27.9	36.8	44.9	44.0	48.0	51.2	40.2	45.4	40.7	37.1	32.2	39.3	37.5	
U.S. Mid-Blend	22.9	22.0	36.8	30.8	23.5	31.4	47.6	61.2	34.2	25.0	45.1	66.0	67.3	50.5	
U.S. Mid-Value	11.6	20.0	61.5	51.9	38.2	21.2	27.7	60.4	65.8	75.7	38.5	30.8	31.2	39.6	
U.S. Mid-Growth	33.8	31.7	55.1	54.5	44.8	72.1	78.6	74.9	61.8	45.8	22.8	46.9	45.9	46.5	
U.S. Small Blend	45.0	35.0	32.6	44.5	22.1	19.1	41.7	53.4	28.4	37.6	44.9	59.2	60.3	52.9	
U.S. Small Value	23.9	14.5	62.1	56.5	28.8	19.3	44.2	48.7	40.7	45.6	23.8	38.8	65.5	61.0	
U.S. Small Growth	29.8	27.7	56.8	59.8	43.5	50.7	76.0	75.4	69.1	71.9	40.8	47.4	43.3	56.9	
Foreign Large Blend	46.9	29.4	46.4	59.0	30.7	17.7	29.3	60.5	55.2	61.2	63.6	44.0	25.0	36.8	
Foreign Large Value	32.0	19.2	50.5	70.2	40.0	15.4	10.3	36.4	65.6	80.2	52.3	31.2	27.3	29.4	
Foreign Small-Mid Blend	18.5	34.6	53.6	61.3	26.7	20.6	35.5	51.5	36.4	50.0	51.7	48.1	25.9	44.0	
World Large-Blend	25.8	25.4	50.7	47.9	39.7	30.4	37.0	47.6	26.5	33.7	55.3	38.5	36.1	56.0	
Diversified Emg Mrkts	67.1	28.9	57.1	64.9	48.9	21.4	32.8	69.1	64.3	70.0	65.9	30.9	19.7	23.4	
Europe Stock	36.8	19.0	23.8	54.5	30.4	25.0	20.8	55.0	77.8	76.5	62.5	46.7	31.3	25.0	
U.S. Real Estate	63.2	4.3	12.7	32.4	40.0	23.9	72.3	90.2	85.7	77.4	30.0	82.5	78.6	42.9	
Global Real Estate	72.9	50.8	17.5	16.1	23.3	61.0	75.0	66.1	76.4	69.1	66.7	83.3	85.1	20.0	
Intermediate Core Bond	21.3	59.4	73.8	50.4	54.8	44.7	37.5	47.4	42.2	63.1	83.8	70.1	26.4	37.9	
Corporate Bond	53.1	66.0	56.9	70.0	29.4	37.0	29.6	42.1	63.2	67.9	69.6	66.7	22.2	22.6	
High-Yield Bond	20.2	49.5	69.9	75.5	38.9	25.1	51.9	67.6	54.2	65.8	73.3	75.8	31.9	27.2	

Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 4** Comparison of Asset- and Equal-Weighted 10-Year Returns %

Category	Active Funds			Passive Funds			Difference Between Passive and Active Returns	
	Asset- Weighted	Equal- Weighted	Difference	Asset- Weighted	Equal- Weighted	Difference	Asset- Weighted	Equal- Weighted
U.S. Large Blend	11.2	10.6	0.6	12.3	12.0	0.3	1.2	1.4
U.S. Large Value	10.7	9.9	0.9	11.1	11.0	0.2	0.4	1.1
U.S. Large Growth	12.1	11.3	0.8	14.0	13.3	0.7	1.9	2.0
U.S. Mid Blend	10.0	8.9	1.1	10.5	10.2	0.3	0.4	1.3
U.S. Mid Value	9.7	9.1	0.6	10.7	10.8	-0.1	1.0	1.8
U.S. Mid Growth	10.7	10.3	0.3	10.6	10.0	0.6	0.0	-0.3
U.S. Small Blend	8.9	8.6	0.2	9.6	9.4	0.2	0.7	0.8
U.S. Small Value	9.1	8.3	0.8	9.4	9.0	0.5	0.3	0.7
U.S. Small Growth	10.2	9.9	0.3	9.4	9.2	0.2	-0.8	-0.6
Foreign Large Blend	4.5	3.9	0.6	4.4	4.3	0.1	-0.1	0.4
Foreign Large Value	4.6	3.6	1.0	4.0	4.2	-0.1	-0.6	0.5
Foreign Small-Mid Blend	5.0	4.7	0.3	5.1	5.0	0.1	0.1	0.3
World Large-Blend	7.4	7.5	-0.1	8.1	8.6	-0.5	0.7	1.1
Diversified Emerging Markets	1.7	1.2	0.5	1.3	1.3	0.0	-0.4	0.2
Europe Stock	4.1	4.6	-0.5	4.6	4.3	0.3	0.5	-0.3
U.S. Real Estate	6.4	5.8	0.6	6.1	5.3	0.9	-0.3	-0.5
Global Real Estate	3.4	2.9	0.5	1.5	1.7	-0.2	-2.0	-1.2
Intermediate Core Bond	1.2	0.9	0.3	1.0	0.8	0.2	-0.3	-0.2
Corporate Bond	2.1	1.9	0.2	1.8	1.6	0.2	-0.3	-0.3
High-Yield Bond	3.5	3.0	0.5	2.8	3.0	-0.2	-0.7	0.0

Source: Morningstar. Data and calculations as of Dec. 31, 2022.

## Results by Category

### U.S. Large-Cap Funds

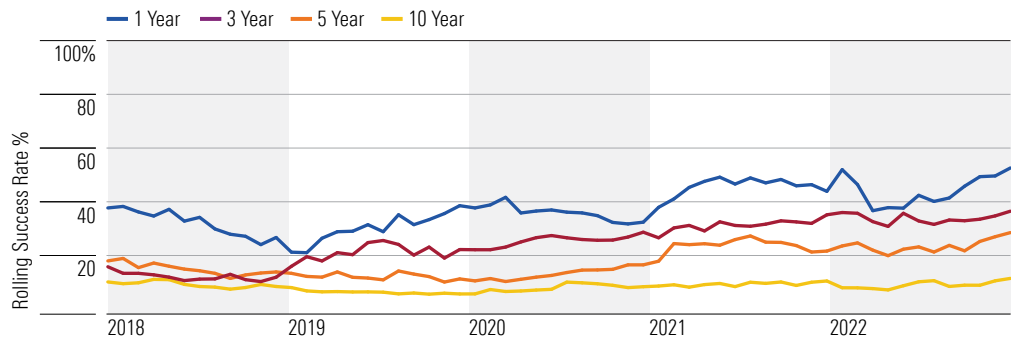
- ▶ Over the long haul, actively managed U.S. large-cap equity funds have generally succeeded less often than active U.S. mid- and small-cap funds. Over the decade through December 2022, 10% of active large-cap funds lived and outperformed their average passive peer. This compares with success rates of 26% and 36% among actively managed mid- and small-cap funds, respectively.
- ▶ Active managers in the large-growth category have had a particularly difficult time delivering value for investors. Sixty-nine percent of the active funds that existed in this category 20 years ago have died, and just 5% managed to both survive and outperform their average passive peer.
- ▶ Value stocks have bested their growth peers of late, reversing a trend from the late-2010s through 2020. The Morningstar U.S. Value Index outpaced the Morningstar U.S. Growth Index by 36 percentage points in 2022. These significant changes in relative performance help explain the recent volatility we have seen in active value and growth funds' short-term success rates.
- ▶ Attrition rates are high among large-cap funds. Overall, just 32% of large-cap funds survived the 20-year period ended Dec. 31, 2022. The odds of survival improved to about 40% for the lowest-cost funds but sagged to 21% for the highest-cost funds during that same time frame.
- ▶ Pricey active large-cap funds are doomed to failure: Just 4% of these funds beat a composite of their passive peers over the decade through 2022. Investors tend to favor cheaper, more successful active large-cap funds, as evidenced by the fact that the average asset-weighted active return surpassed the average equal-weighted active return across all large-cap categories and each time horizon, except large-growth funds during the past five years.
- ▶ The median 10-year excess return for surviving active funds across all three U.S. large-cap categories was negative, and the distributions of excess returns for the blend and value categories had a negative skew. This indicates that the penalty for poor manager selection tended to be greater than the reward for choosing a winner.

**Exhibit 5 U.S. Large Blend**

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	386	97.9	205	96.1	-15.1	-18.4	-16.0	-17.7	54.1
3-Year	352	84.7	189	92.6	7.3	7.3	6.6	7.2	38.1
5-Year	352	78.1	162	86.4	8.2	9.1	7.7	8.7	30.1
10-Year	367	64.3	109	76.1	11.2	12.3	10.6	12.0	13.1
15-Year	460	42.4	119	58.8	7.3	8.7	7.0	8.5	9.3
20-Year	423	31.7	107	42.1	8.7	9.7	8.6	9.5	8.7
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	70	67.1	20	85.0	11.9	12.4	11.3	12.3	25.7
40th Percentile	75	74.7	24	91.7	11.0	12.4	11.0	12.5	14.7
60th Percentile	72	70.8	22	63.6	10.8	12.3	10.4	12.0	9.7
80th Percentile	73	61.6	21	71.4	11.3	12.1	10.9	12.0	9.6
100th Percentile	75	49.3	22	68.2	9.8	11.8	9.6	11.3	6.7

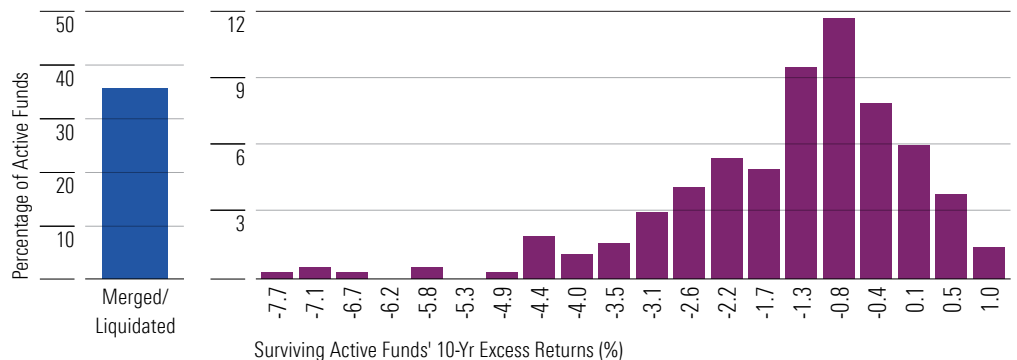
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 6 Rolling Success Rates for Surviving Active U.S. Large-Blend Funds**



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 7 Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Large-Blend Funds**



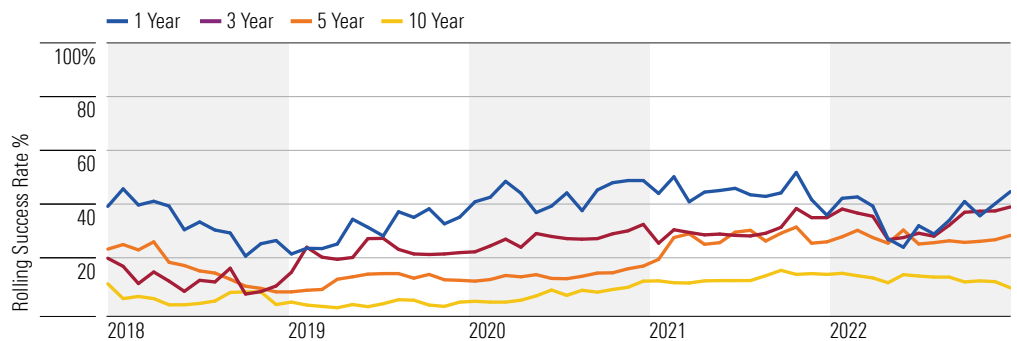
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 8 U.S. Large Value**

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	318	98.1	101	98.0	-5.9	-4.3	-6.3	-5.5	47.2
3-Year	311	85.5	105	89.5	7.5	7.4	6.8	6.9	41.5
5-Year	327	75.8	81	91.4	7.7	7.9	6.8	7.3	30.9
10-Year	297	64.6	40	97.5	10.7	11.1	9.9	11.0	11.4
15-Year	366	47.3	27	85.2	7.3	7.7	6.6	7.8	10.9
20-Year	318	34.3	14	50.0	8.8	9.0	8.2	8.3	19.5
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	59	54.2	8	100.0	11.3	11.7	10.7	11.4	20.3
40th Percentile	60	73.3	6	83.3	10.8	10.3	10.0	10.3	10.0
60th Percentile	59	62.7	9	100.0	10.7	11.4	9.9	11.2	13.6
80th Percentile	59	76.3	9	100.0	9.7	10.4	9.8	10.9	10.2
100th Percentile	60	56.7	8	100.0	10.0	10.7	9.0	10.8	3.3

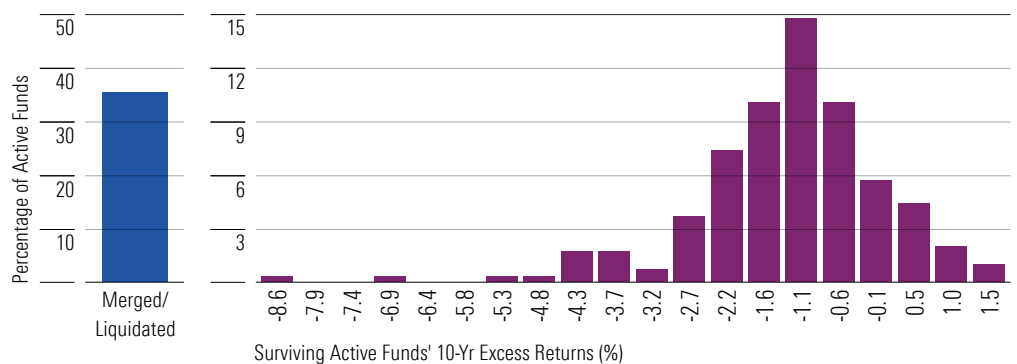
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 9 Rolling Success Rates for Surviving Active U.S. Large-Value Funds**



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 10 Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Large-Value Funds**



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

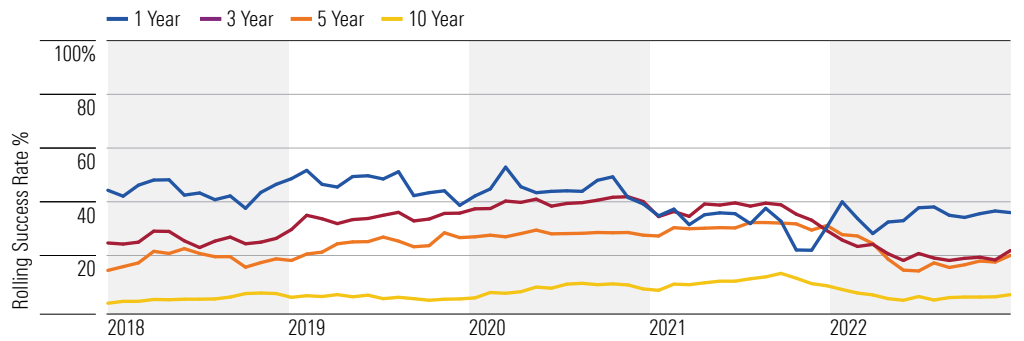


**Exhibit 11** U.S. Large Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	357	97.5	75	100.0	-32.1	-30.9	-30.5	-27.9	37.5
3-Year	364	89.6	64	93.8	4.5	7.2	4.6	6.8	23.4
5-Year	375	83.7	56	91.1	8.1	10.4	8.2	9.7	21.6
10-Year	440	62.5	40	97.5	12.1	14.0	11.3	13.3	7.0
15-Year	464	43.1	27	85.2	8.3	10.6	7.8	10.1	3.0
20-Year	448	31.0	20	80.0	9.6	11.5	8.9	10.5	4.7
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	85	61.2	7	100.0	13.0	13.0	12.3	13.5	15.3
40th Percentile	90	66.7	8	100.0	11.5	15.1	11.7	14.0	5.6
60th Percentile	87	65.5	9	100.0	11.9	13.6	11.4	13.9	5.7
80th Percentile	88	55.7	8	100.0	11.9	13.9	10.8	13.6	8.0
100th Percentile	88	62.5	8	87.5	10.6	11.5	10.1	11.0	1.1

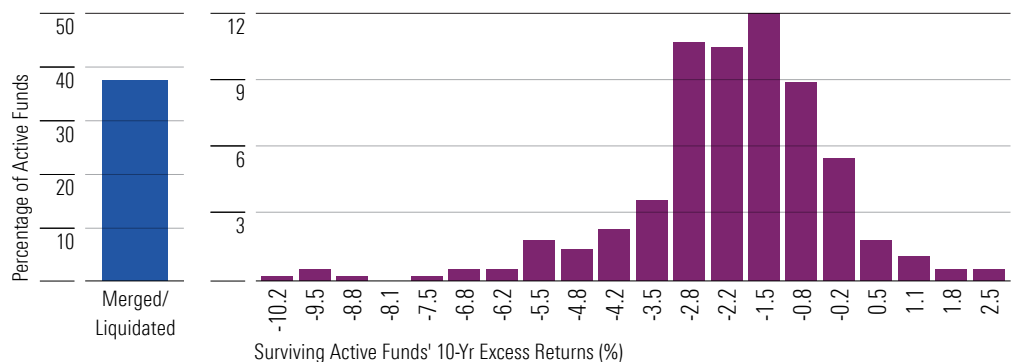
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 12** Rolling Success Rates for Surviving Active U.S. Large-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 13** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Large-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

### U.S. Mid-Cap Funds

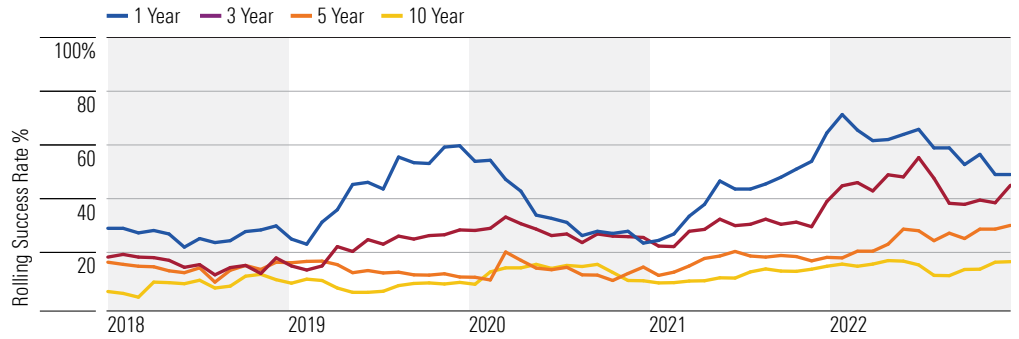
- ▶ Of active mid-cap funds, 46% beat their average passive counterpart in 2022.
- ▶ Active mid-cap value funds' one-year success rate has starkly declined from 2020 (76% success rate) to 2022 (40%). Success rates in these categories have been whipsawed by divergent performance trends between value and growth stocks and large caps versus small caps. This is nothing new; success rates for actively managed U.S. mid-cap funds have tended to be more widely dispersed and variable than those for U.S. large- or small-cap funds.
- ▶ These extremes are partly evidence of the "crossroads" status of the mid-cap category, which is populated with many funds that may have relatively messy portfolios (those that bleed into other market-cap segments and styles) or could otherwise be passersby as they migrate "south" from large-cap territory or "north" from the small-cap space, for example.

**Exhibit 14** U.S. Mid-Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	109	99.1	67	98.5	-16.0	-16.4	-14.1	-14.3	50.5
3-Year	101	87.1	63	87.3	5.6	5.3	6.0	6.1	46.5
5-Year	114	71.1	57	84.2	6.4	6.2	5.4	5.9	31.6
10-Year	116	62.9	45	77.8	10.0	10.5	8.9	10.2	18.1
15-Year	141	53.2	34	70.6	7.5	8.3	6.7	8.1	10.6
20-Year	110	47.3	23	52.2	9.5	10.3	9.1	10.0	12.7
<b>Performance by Fee Quintile</b>									
(Trailing 10 Years)									
20th Percentile	22	72.7	8	75.0	10.6	10.5	9.9	10.3	31.8
40th Percentile	24	66.7	10	90.0	9.7	10.6	10.5	10.7	33.3
60th Percentile	22	50.0	9	77.8	7.7	10.1	8.3	10.5	9.1
80th Percentile	23	69.6	6	83.3	8.9	10.1	8.6	10.0	13.0
100th Percentile	24	54.2	12	66.7	7.5	10.0	7.2	9.7	0.0

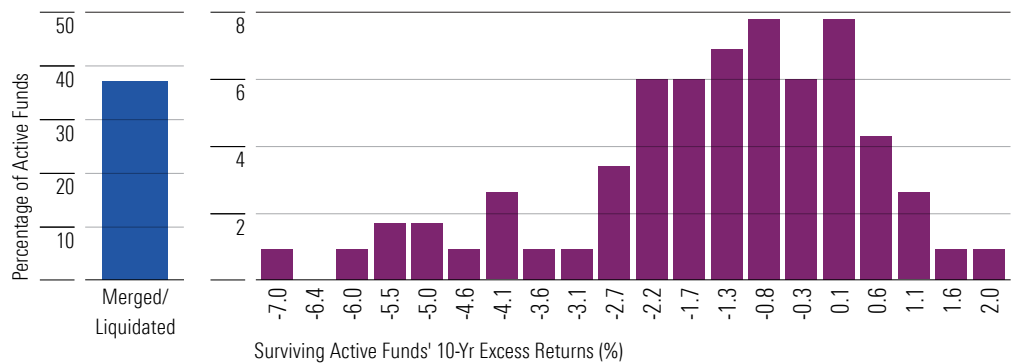
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 15** Rolling Success Rates for Surviving Active U.S. Mid-Blend Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 16** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Mid-Blend Funds



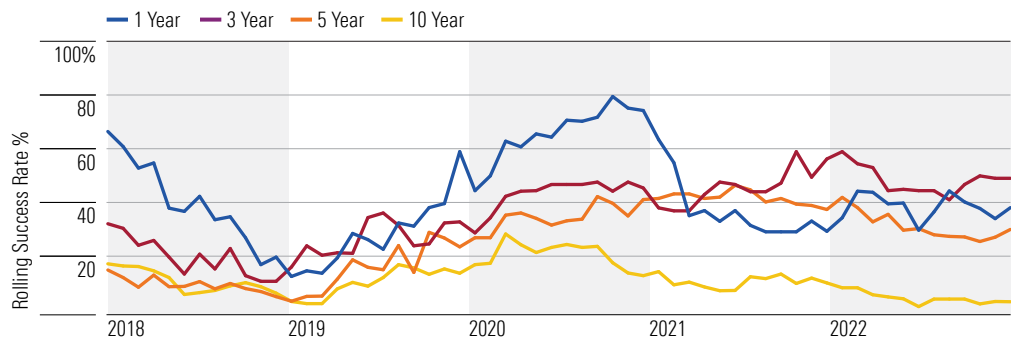
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 17 U.S. Mid-Value**

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	106	96.2	32	100.0	-6.9	-8.5	-8.6	-7.6	39.6
3-Year	109	86.2	26	88.5	7.8	6.2	7.1	6.2	50.5
5-Year	111	75.7	22	100.0	6.7	6.5	5.8	6.3	31.5
10-Year	108	61.1	19	94.7	9.7	10.7	9.1	10.8	4.6
15-Year	116	51.7	14	78.6	7.4	7.9	7.2	7.8	17.2
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	21	47.6	2	100.0	9.9	10.9	9.5	10.8	4.8
40th Percentile	22	45.5	6	100.0	10.0	10.2	8.8	11.0	4.5
60th Percentile	21	76.2	3	100.0	9.8	11.3	9.1	11.3	4.8
80th Percentile	20	80.0	4	75.0	9.8	12.0	8.8	12.0	10.0
100th Percentile	23	60.9	4	100.0	9.4	9.4	9.2	9.2	0.0

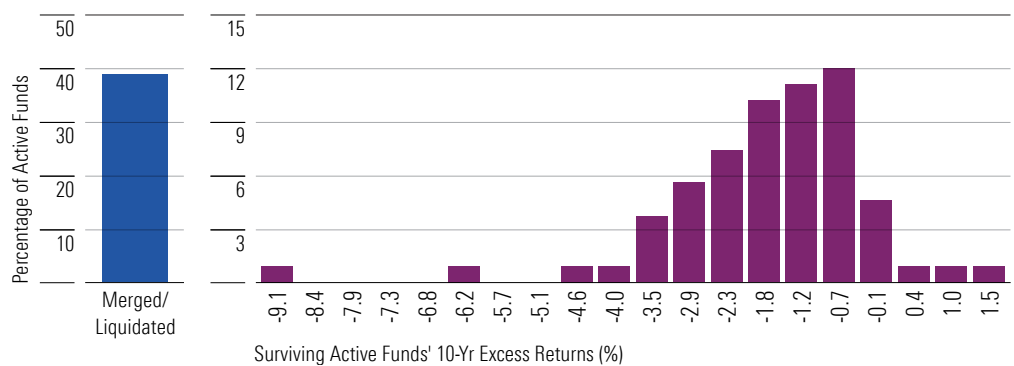
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 18 Rolling Success Rates for Surviving Active U.S. Mid-Value Funds**



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 19 Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Mid-Value Funds**



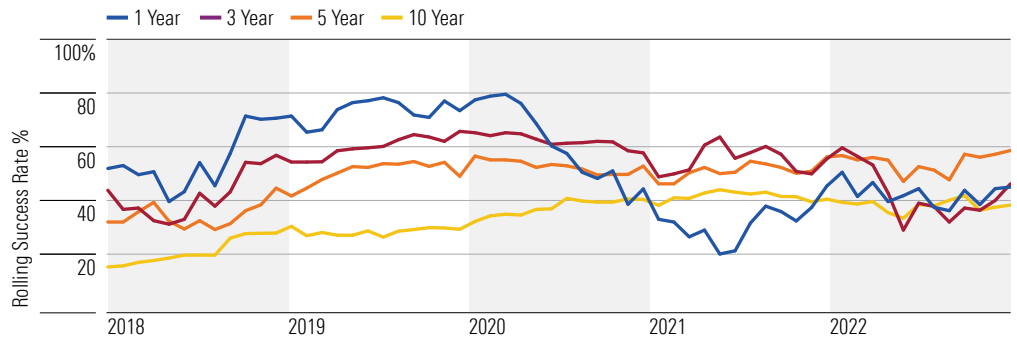
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 20** U.S. Mid-Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	157	96.8	33	100.0	-28.9	-26.4	-28.1	-27.1	46.5
3-Year	176	88.1	32	90.6	3.5	4.3	4.9	4.2	47.7
5-Year	178	79.8	27	85.2	7.3	6.9	7.4	6.0	60.1
10-Year	216	65.7	21	71.4	10.7	10.6	10.3	10.0	39.8
15-Year	275	44.4	15	73.3	7.5	8.2	7.1	7.6	23.3
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	44	65.9	2	100.0	11.3	10.8	10.6	10.6	47.7
40th Percentile	41	73.2	6	100.0	10.7	10.5	10.4	10.8	53.7
60th Percentile	43	74.4	4	25.0	11.1	12.7	10.9	12.5	51.2
80th Percentile	44	59.1	4	75.0	10.4	10.2	10.1	9.5	25.0
100th Percentile	44	59.1	5	60.0	10.4	9.0	9.6	7.7	25.0

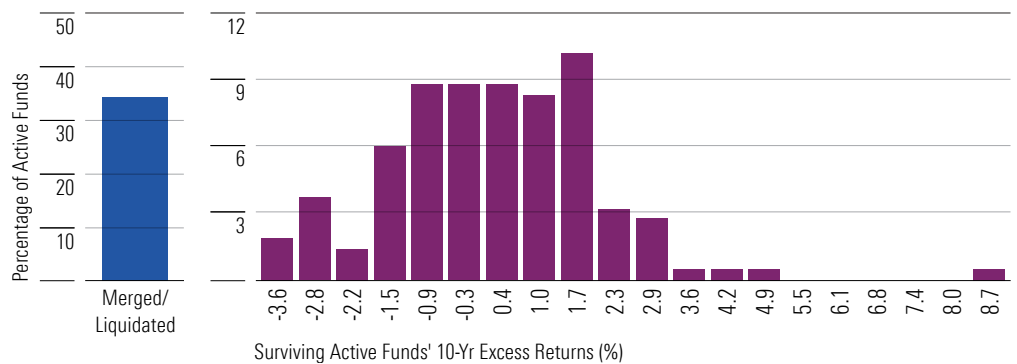
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 21** Rolling Success Rates for Surviving Active U.S. Mid-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 22** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Mid-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

### U.S. Small-Cap Funds

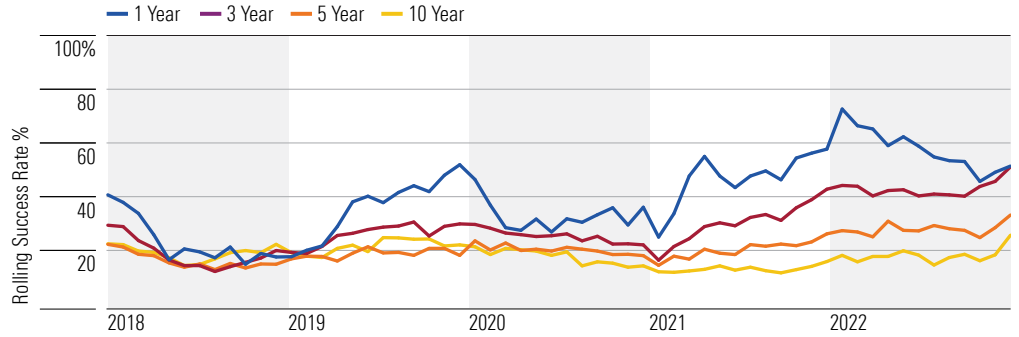
- ▶ Nearly 57% of all active small-cap funds outperformed their average passive peer in 2022.
- ▶ Long-run success rates among actively managed U.S. small-cap funds have generally been higher than those seen among large-cap funds.
- ▶ U.S. stock-pickers have found the most success in the small-growth category. But the table stakes are high: The 10-year mortality rate and distribution of annualized excess returns show that active managers in this category were most likely to either beat passive peers or liquidate the fund.

#### Exhibit 23 U.S. Small Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	172	97.1	70	98.6	-16.2	-18.0	-16.2	-16.5	52.9
3-Year	192	84.4	63	93.7	5.7	4.5	5.1	4.8	52.6
5-Year	222	71.2	55	87.3	5.1	5.2	4.5	4.9	34.7
10-Year	184	67.9	39	82.1	8.9	9.6	8.6	9.4	27.2
15-Year	183	51.4	37	62.2	7.2	7.8	6.7	7.2	23.5
20-Year	121	47.1	22	45.5	9.6	10.4	8.7	9.3	19.8
<b>Performance by Fee Quintile</b>									
(Trailing 10 Years)									
20th Percentile	36	77.8	8	100.0	9.8	9.6	9.5	9.7	47.2
40th Percentile	36	72.2	8	87.5	8.8	9.2	8.7	9.3	22.2
60th Percentile	37	62.2	6	66.7	8.2	10.0	8.5	9.4	21.6
80th Percentile	36	66.7	9	77.8	8.3	9.9	8.3	10.3	25.0
100th Percentile	38	63.2	8	75.0	7.8	9.0	8.3	8.3	21.1

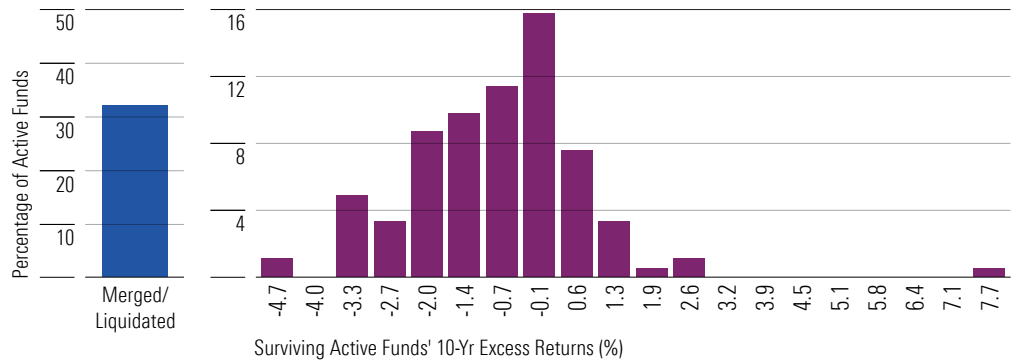
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 24** Rolling Success Rates for Surviving Active U.S. Small-Blend Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 25** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Small-Blend Funds



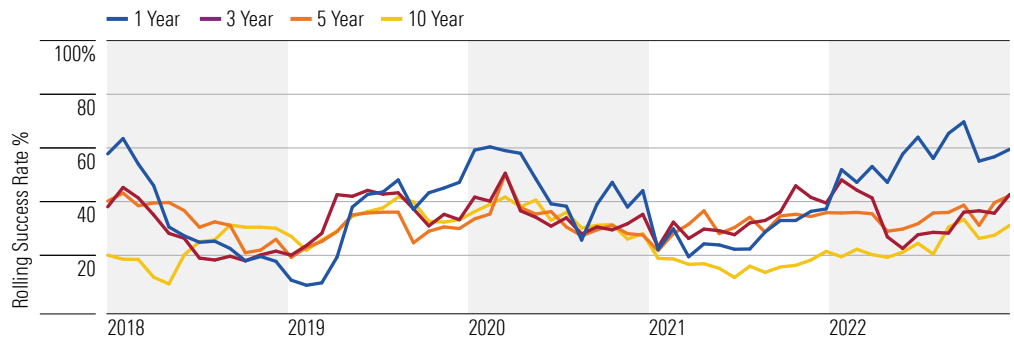
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 26** U.S. Small Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	123	99.2	25	100.0	-8.5	-10.8	-9.8	-11.8	61.0
3-Year	113	83.2	25	92.0	7.9	6.0	7.3	6.7	44.2
5-Year	112	76.8	23	95.7	5.4	5.0	4.7	4.5	43.8
10-Year	104	72.1	16	93.8	9.1	9.4	8.3	9.0	32.7
15-Year	133	54.1	11	81.8	7.4	7.7	6.9	7.6	15.8
20-Year	104	52.9	6	83.3	9.3	9.3	9.1	9.3	22.1
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	20	75.0	2	100.0	9.5	10.2	9.1	9.3	40.0
40th Percentile	19	68.4	4	100.0	8.5	9.0	8.0	9.2	36.8
60th Percentile	22	68.2	3	100.0	8.7	8.5	8.0	9.5	22.7
80th Percentile	21	90.5	2	100.0	9.3	7.4	8.5	9.5	47.6
100th Percentile	21	61.9	5	80.0	8.9	7.9	7.9	7.9	19.0

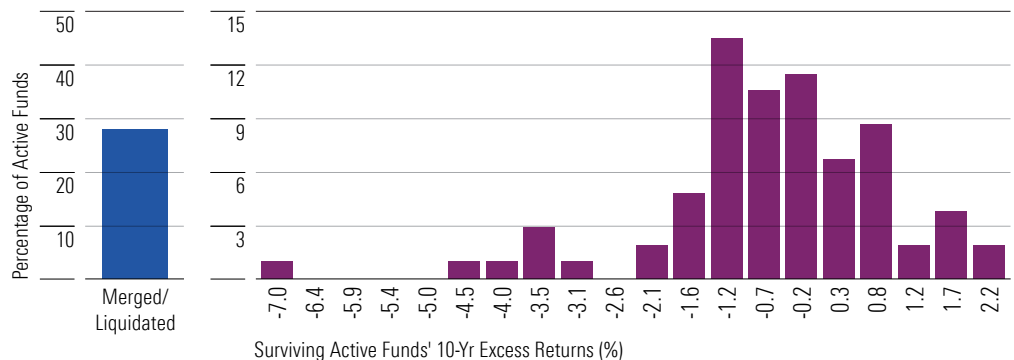
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 27** Rolling Success Rates for Surviving Active U.S. Small-Value Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 28** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Small-Value Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

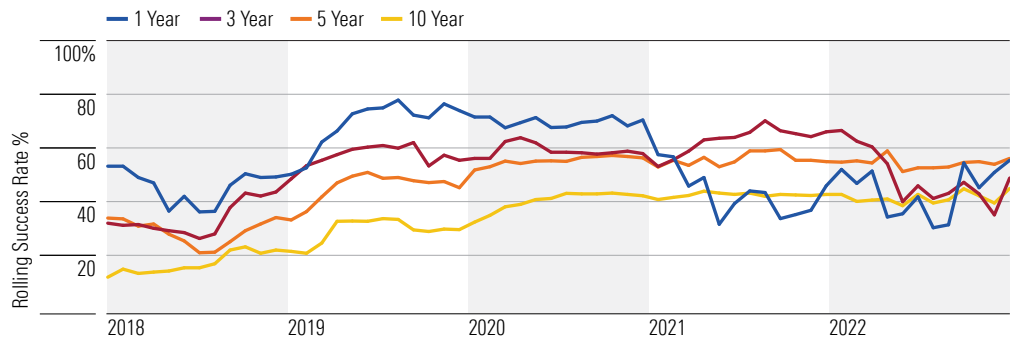


**Exhibit 29** U.S. Small Growth

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	167	98.8	17	100.0	-27.8	-26.7	-28.0	-28.7	56.9
3-Year	181	89.0	15	100.0	2.5	1.4	4.0	3.2	50.3
5-Year	203	80.8	14	100.0	6.3	4.7	6.2	4.9	57.6
10-Year	211	64.9	12	100.0	10.2	9.4	9.9	9.2	46.4
15-Year	256	43.4	11	81.8	8.1	7.9	7.2	7.5	26.6
20-Year	202	41.6	3	100.0	9.5	10.2	8.4	9.9	5.9
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	39	69.2	2	100.0	11.3	9.2	10.1	9.3	48.7
40th Percentile	46	67.4	3	100.0	9.6	9.9	10.1	10.4	54.3
60th Percentile	43	65.1	2	100.0	9.7	8.2	9.9	8.9	44.2
80th Percentile	42	61.9	2	100.0	8.3	10.2	9.2	10.6	38.1
100th Percentile	41	61.0	3	100.0	10.2	7.7	9.9	7.2	43.9

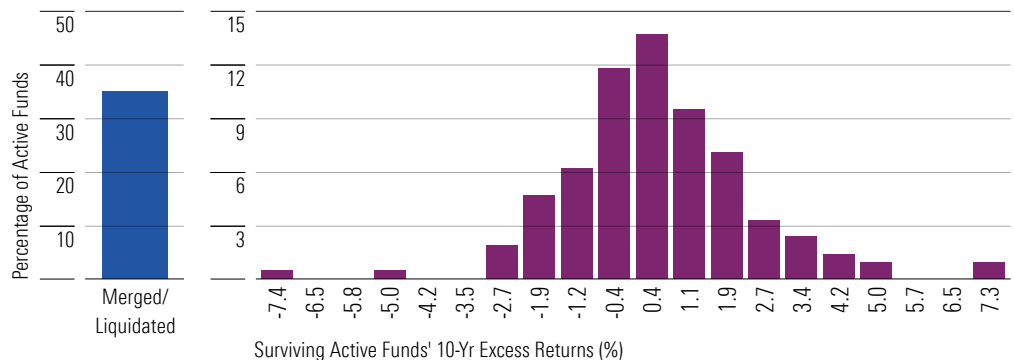
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 30** Rolling Success Rates for Surviving Active U.S. Small-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 31** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Small-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

### Foreign Stock

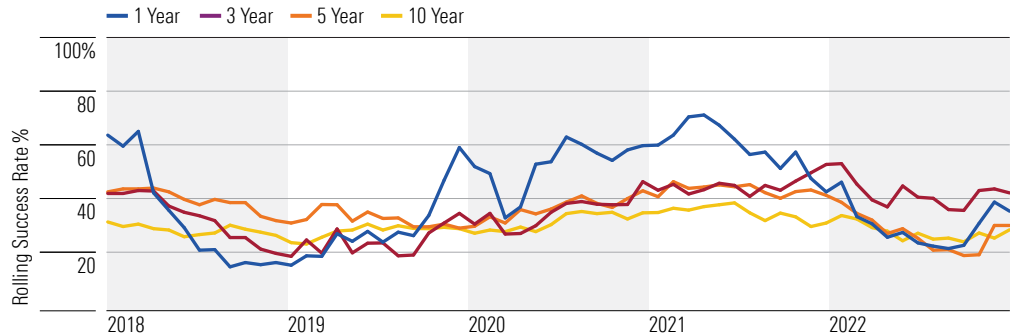
- ▶ One-year success rates fell in five of the six foreign-stock categories included in our analysis. Active managers' 2022 success rate across these categories was 34%.
- ▶ As of April 30, 2021, the world large-stock category was broken into three separate categories: world large-stock value, world large-stock blend, and world large-stock growth. These new categories better capture the diverse strategies plied by managers that belonged to the legacy category. The current and historical figures presented in this analysis reflect the present and past composition of the new world large-stock blend category.
- ▶ The foreign-stock categories tend to be more target-rich for active managers. At 28%, foreign-stock funds' 10-year active success rate was materially higher than that of U.S. stock funds (20%).
- ▶ The median 10-year excess return for surviving active managers was positive in the Europe stock and foreign small/mid-blend categories and close to even for foreign large-blend and diversified emerging-markets funds. Collectively, that's a more well-rounded payout profile for investors in active funds relative to U.S. stock categories.
- ▶ The difference between 10-year asset-weighted returns for passive and active funds in three of these six categories was negative, indicating better odds of success in these categories than U.S. stock categories.

#### Exhibit 32 Foreign Large Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	190	96.3	97	96.9	-15.4	-15.3	-16.0	-14.8	36.8
3-Year	179	84.9	96	89.6	0.9	0.8	0.3	0.6	43.6
5-Year	184	75.5	78	87.2	1.2	1.4	0.8	1.4	31.5
10-Year	177	65.0	37	75.7	4.5	4.4	3.9	4.3	29.9
15-Year	174	45.4	30	60.0	2.4	1.8	1.2	1.5	24.1
20-Year	169	36.1	22	36.4	6.8	6.4	5.8	6.2	18.9
<b>Performance by Fee Quintile</b>									
(Trailing 10 Years)									
20th Percentile	33	57.6	8	87.5	4.6	4.3	4.6	4.4	42.4
40th Percentile	34	79.4	7	71.4	4.8	4.6	4.4	4.2	41.2
60th Percentile	36	66.7	7	71.4	4.1	4.5	3.7	4.2	19.4
80th Percentile	35	60.0	7	71.4	4.4	4.2	3.8	4.7	22.9
100th Percentile	36	58.3	8	75.0	3.5	3.9	3.3	3.9	27.8

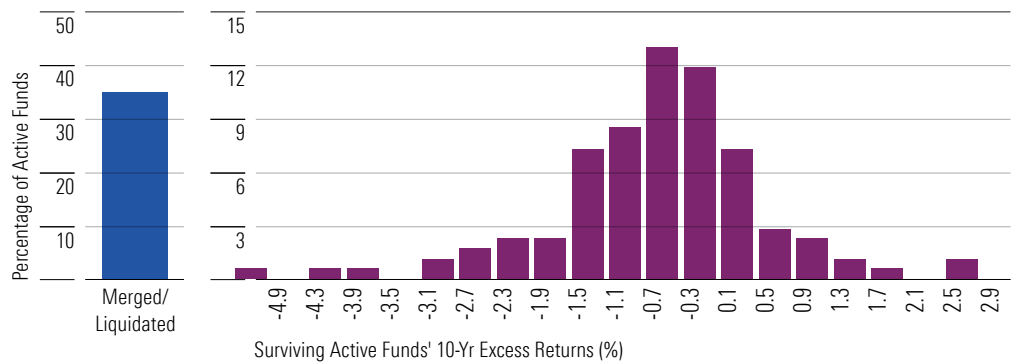
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 33** Rolling Success Rates for Surviving Active Foreign Large-Blend Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 34** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Foreign Large-Blend Funds



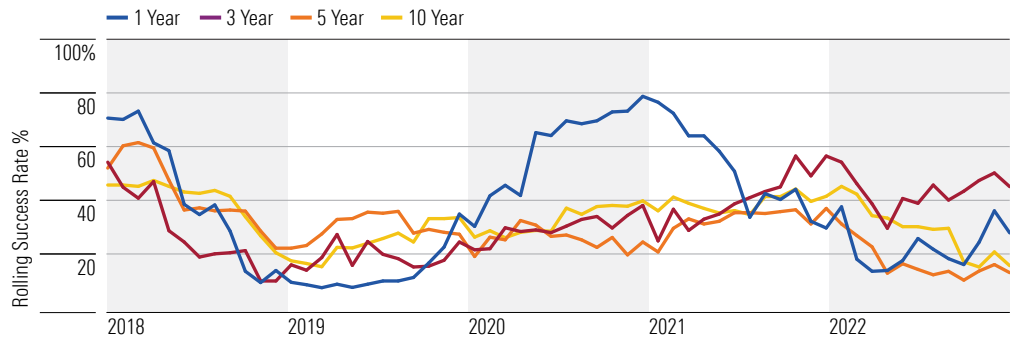
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 35** Foreign Large Value

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	85	96.5	40	100.0	-9.1	-7.2	-9.8	-8.1	29.4
3-Year	88	83.0	39	87.2	1.9	1.2	1.0	0.5	46.6
5-Year	89	75.3	29	86.2	1.0	1.3	0.5	1.4	14.6
10-Year	99	63.6	15	86.7	4.6	4.0	3.6	4.2	17.2
15-Year	84	54.8	2	100.0	1.9	0.8	1.0	1.5	17.9
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	19	57.9	3	100.0	4.5	4.4	4.0	4.5	26.3
40th Percentile	19	78.9	3	100.0	3.7	3.1	3.7	3.3	15.8
60th Percentile	18	72.2	3	100.0	3.3	3.6	3.5	3.8	22.2
80th Percentile	20	60.0	3	100.0	5.7	6.8	3.9	5.3	20.0
100th Percentile	22	54.5	3	33.3	3.0	4.5	3.0	4.0	0.0

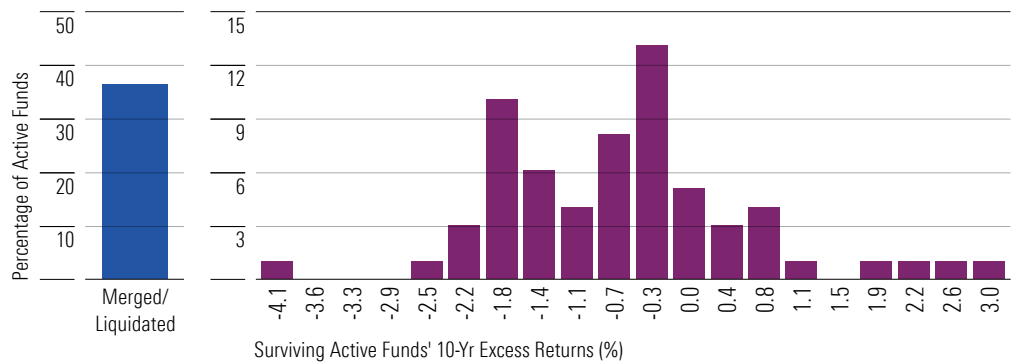
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 36** Rolling Success Rates for Surviving Active Foreign Large-Value Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 37** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Foreign Large-Value Funds



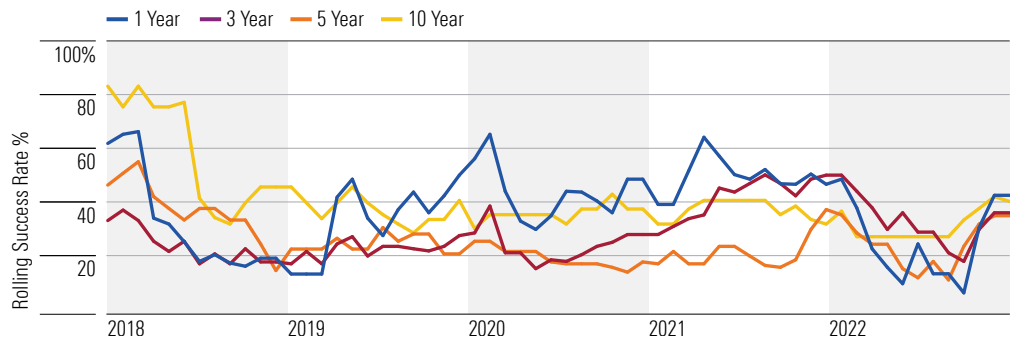
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 38** Foreign Small/Mid-Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	25	96.0	7	100.0	-18.6	-21.2	-20.8	-18.8	44.0
3-Year	32	68.8	9	88.9	0.2	-0.6	-0.6	0.3	37.5
5-Year	33	60.6	7	100.0	-0.5	-0.3	-1.1	-0.2	36.4
10-Year	24	54.2	9	88.9	5.0	5.1	4.7	5.0	41.7
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	5	80.0	2	100.0	5.8	4.1	5.1	4.2	60.0
40th Percentile	5	20.0	2	100.0	4.2	5.9	4.2	5.3	20.0
60th Percentile	4	50.0	1	0.0	3.4	2.7	3.5	2.7	25.0
80th Percentile	4	100.0	2	100.0	5.0	5.7	5.8	5.9	75.0
100th Percentile	6	33.3	2	100.0	5.9	4.6	4.8	4.6	33.3

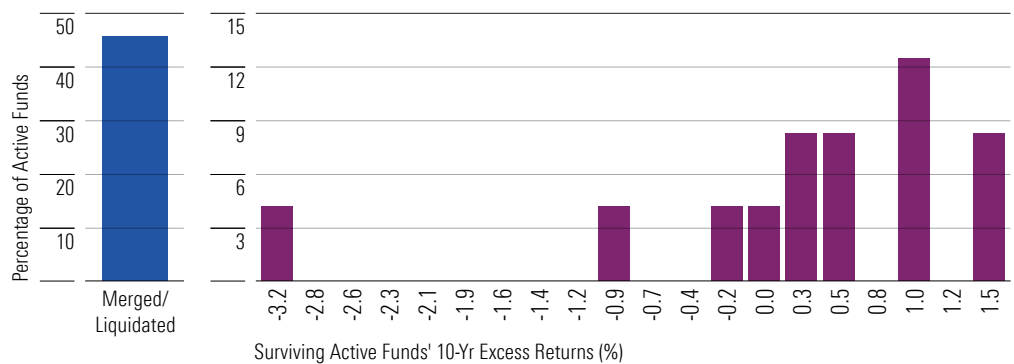
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 39** Rolling Success Rates for Surviving Active Foreign Small/Mid-Blend Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 40** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Foreign Small/Mid-Blend Funds



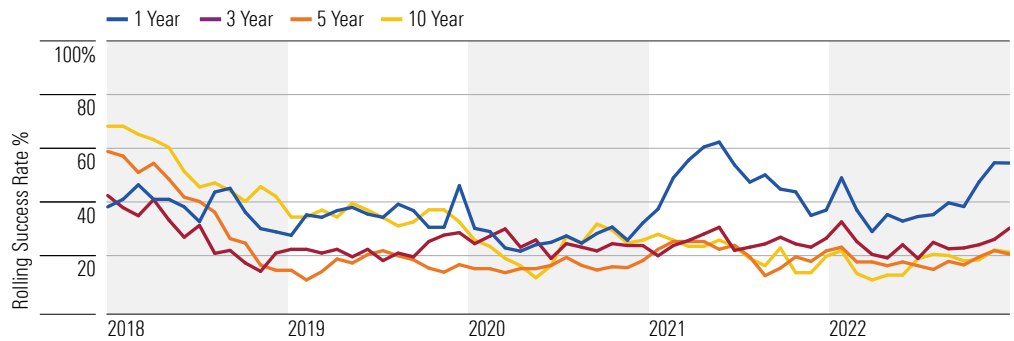
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 41** World Large-Blend

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	100	93.0	22	100.0	-16.7	-17.4	-16.4	-17.9	56.0
3-Year	88	86.4	19	100.0	3.4	3.9	3.6	4.5	31.8
5-Year	77	87.0	18	100.0	4.4	5.3	4.6	5.6	22.1
10-Year	57	86.0	9	100.0	7.4	8.1	7.5	8.6	22.8
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	12	91.7	2	100.0	5.6	7.9	6.8	8.6	16.7
40th Percentile	11	72.7	2	100.0	7.6	9.0	7.7	9.0	27.3
60th Percentile	11	90.9	1	100.0	8.0	8.2	7.8	8.2	27.3
80th Percentile	11	90.9	2	100.0	7.8	8.4	8.1	9.0	27.3
100th Percentile	12	83.3	2	100.0	7.9	7.7	7.1	8.1	16.7

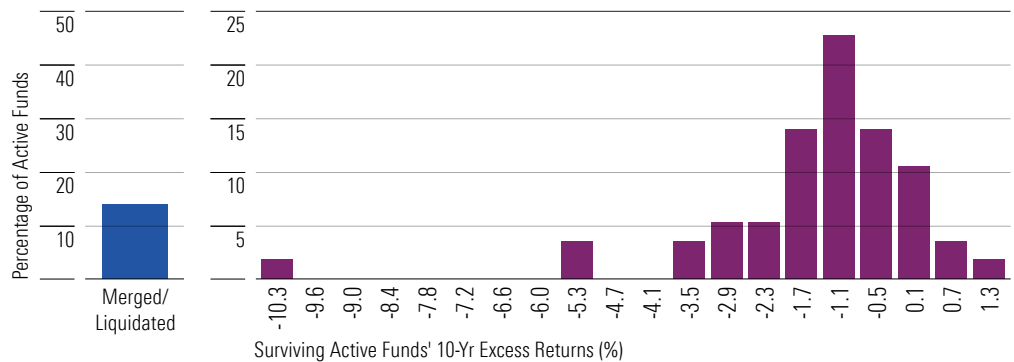
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 42** Rolling Success Rates for Surviving Active World Large-Blend Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 43** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active World Large-Blend Fund



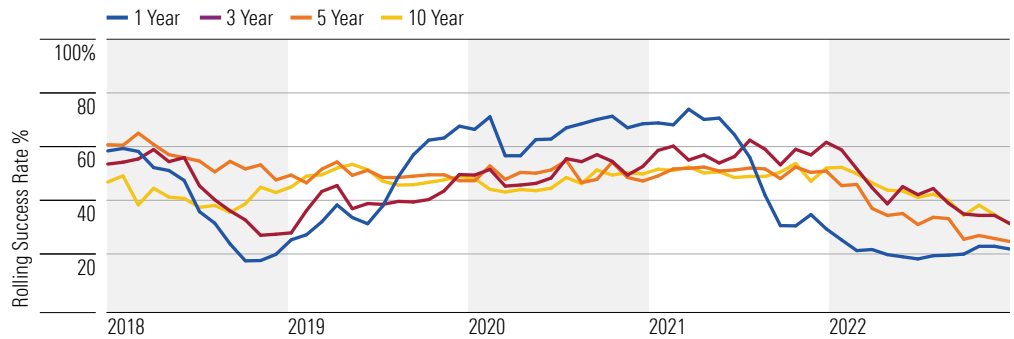
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 44** Diversified Emerging Markets

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	218	98.2	77	98.7	-22.8	-18.8	-22.0	-17.7	23.4
3-Year	228	81.6	81	84.0	-3.2	-2.1	-2.5	-2.1	32.9
5-Year	225	73.3	64	82.8	-1.3	-1.0	-1.5	-1.1	26.2
10-Year	153	68.0	34	73.5	1.7	1.3	1.2	1.3	32.7
15-Year	86	68.6	7	71.4	0.8	0.5	0.2	0.3	38.4
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	29	82.8	5	100.0	1.8	1.5	1.5	1.5	55.2
40th Percentile	30	70.0	8	37.5	2.2	1.2	0.9	0.9	26.7
60th Percentile	32	68.8	7	85.7	1.2	1.0	1.3	1.4	25.0
80th Percentile	31	54.8	7	57.1	0.7	0.8	0.4	1.1	19.4
100th Percentile	31	67.7	7	100.0	1.0	0.9	1.2	1.5	35.5

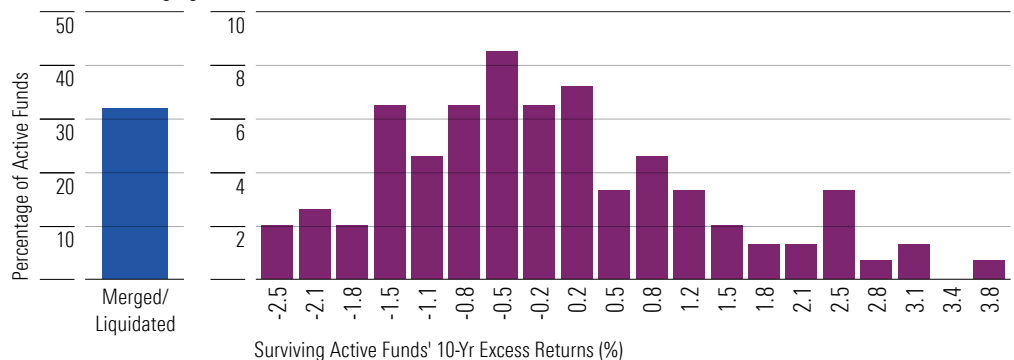
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 45** Rolling Success Rates for Surviving Active Diversified Emerging-Markets Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 46** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Diversified Emerging-Markets Funds



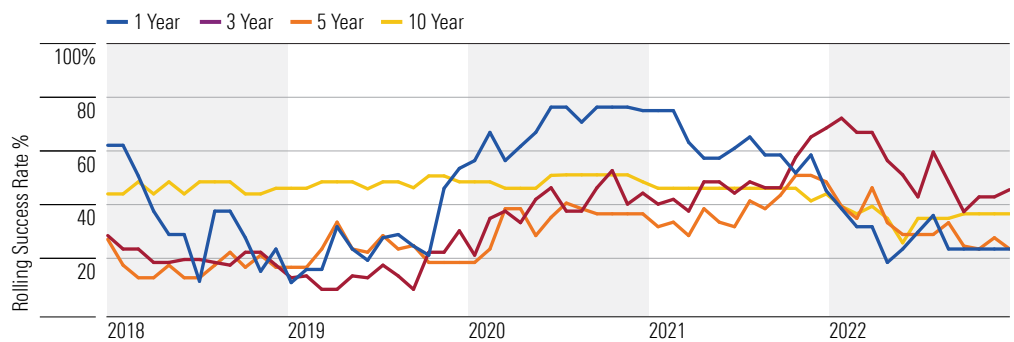
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 47** Europe Stock

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	16	100.0	27	96.3	-17.0	-15.6	-21.0	-16.1	25.0
3-Year	17	88.2	34	73.5	0.7	1.2	1.6	1.3	47.1
5-Year	24	66.7	36	61.1	1.0	1.9	1.7	2.0	25.0
10-Year	21	57.1	12	75.0	4.1	4.6	4.6	4.3	38.1
15-Year	22	45.5	13	61.5	1.8	1.6	1.9	0.9	40.9
20-Year	51	19.6	6	50.0	6.7	6.6	6.8	5.6	15.7
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	4	75.0	3	100.0	5.0	4.7	5.8	4.4	75.0
40th Percentile	4	75.0	2	50.0	4.7	4.6	4.6	3.9	50.0
60th Percentile	4	50.0	1	100.0	3.8	6.8	4.0	6.8	25.0
80th Percentile	4	50.0	3	66.7	4.5	4.3	4.6	4.2	25.0
100th Percentile	5	40.0	3	66.7	5.3	3.7	4.8	3.7	20.0

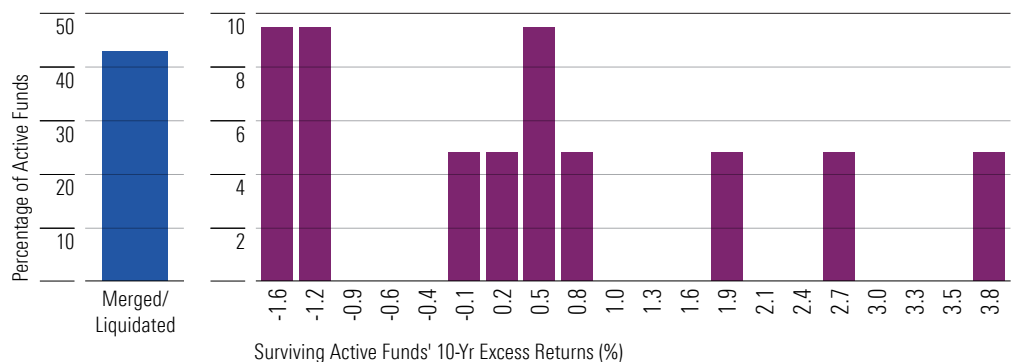
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 48** Rolling Success Rates for Surviving Active Europe-Stock Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 49** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Europe-Stock Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.



## Real Estate

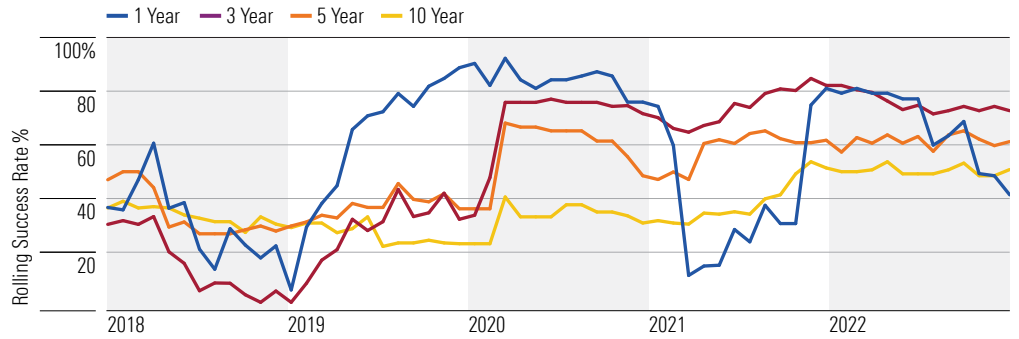
- ▶ At 23%, the 20-year success rate of actively managed real estate funds exceeds that for U.S. stock funds (14%), foreign-stock funds (21%) and bond funds (17%).
- ▶ Success rates in the global real estate category fluctuate dramatically over shorter time horizons. This owes to the diversity of funds within the category. Some invest exclusively outside the United States, while others are more truly global. Thus, differences in performance between U.S. and ex-U.S. real estate securities will cause active managers' success rates to ebb and flow.

### Exhibit 50 U.S. Real Estate

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	63	96.8	31	100.0	-24.7	-26.1	-25.7	-25.5	42.9
3-Year	62	87.1	31	90.3	0.2	-1.0	-0.3	-2.2	74.2
5-Year	67	76.1	25	88.0	4.1	3.3	3.4	2.0	62.7
10-Year	65	70.8	18	77.8	6.4	6.1	5.8	5.3	52.3
15-Year	74	55.4	7	71.4	5.9	6.0	5.1	5.6	25.7
20-Year	55	52.7	5	80.0	8.9	8.7	8.3	8.6	23.6
<b>Performance by Fee Quintile</b>									
(Trailing 10 Years)									
20th Percentile	12	66.7	4	100.0	6.7	6.2	6.2	5.5	58.3
40th Percentile	13	61.5	3	66.7	6.0	6.0	5.8	5.0	38.5
60th Percentile	13	61.5	2	100.0	6.2	6.1	6.0	4.7	53.8
80th Percentile	13	84.6	0	0.0	6.7	0.0	6.0	0.0	76.9
100th Percentile	14	78.6	9	66.7	5.7	4.7	5.2	5.2	35.7

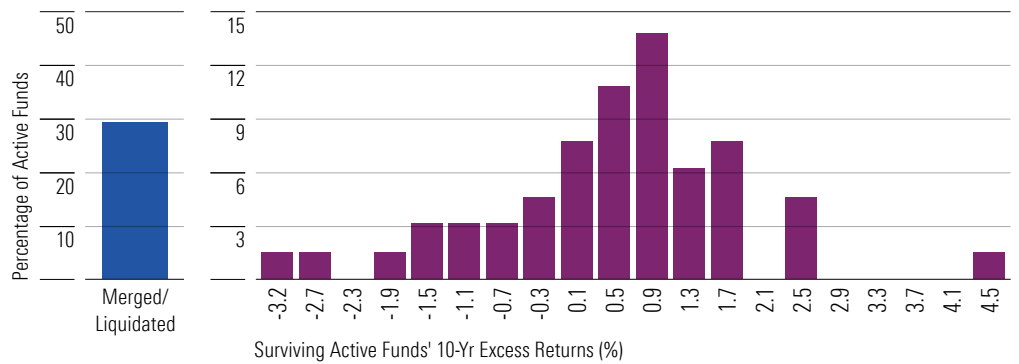
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 51** Rolling Success Rates for Surviving Active U.S. Real Estate Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 52** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active U.S. Real Estate Funds



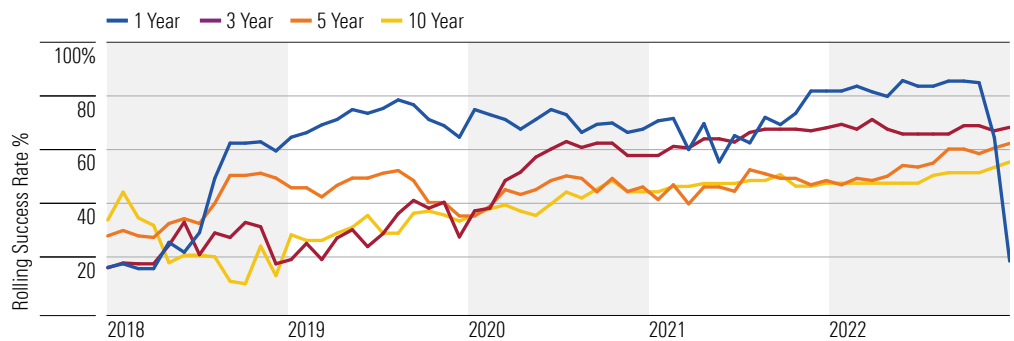
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 53** Global Real Estate

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	45	95.6	13	100.0	-24.6	-23.6	-25.3	-24.3	20.0
3-Year	53	79.2	13	92.3	-3.9	-6.8	-4.0	-6.7	69.8
5-Year	58	67.2	14	85.7	0.7	-2.0	0.5	-1.8	63.8
10-Year	51	60.8	10	90.0	3.4	1.5	2.9	1.7	56.9
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	8	62.5	1	100.0	4.0	1.2	4.2	1.2	62.5
40th Percentile	13	61.5	3	66.7	3.3	0.8	2.8	0.8	53.8
60th Percentile	10	50.0	2	100.0	3.2	3.3	2.9	3.3	50.0
80th Percentile	9	77.8	2	100.0	3.7	0.4	2.9	-0.1	77.8
100th Percentile	11	54.5	2	100.0	3.3	2.9	2.3	2.9	45.5

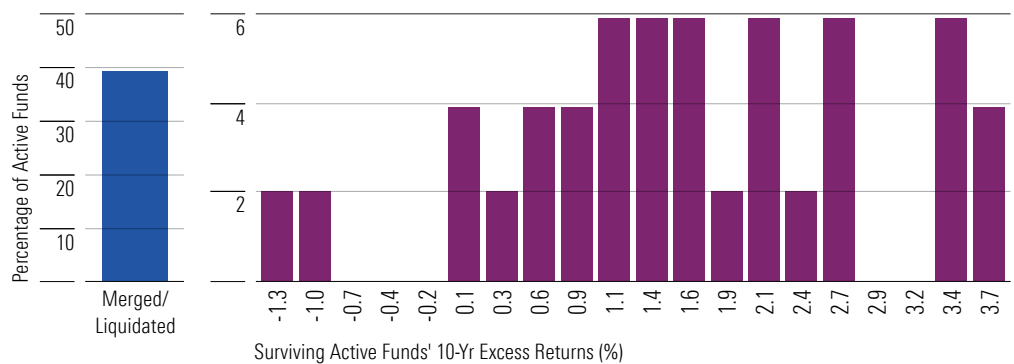
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 54** Rolling Success Rates for Surviving Active Global Real Estate Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 55** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Global Real Estate Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

### Fixed Income

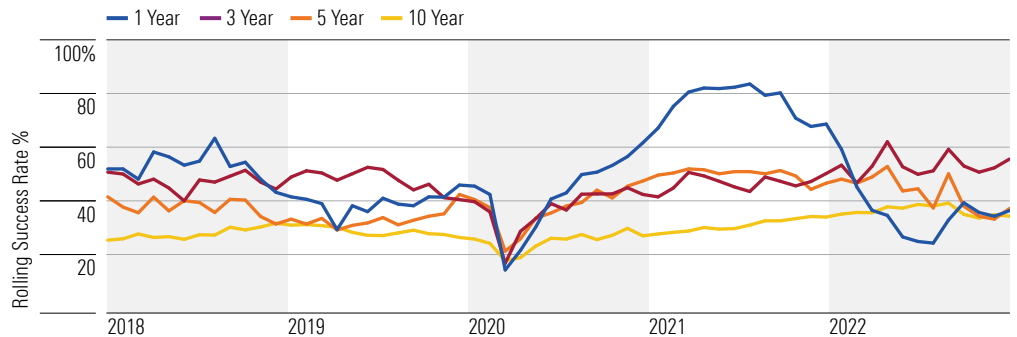
- ▶ Active bond funds' success rate in 2022 (30%) fell drastically from their lofty 2021 mark (72%).
- ▶ Over 43% of active bond funds survived and outperformed their average passive counterpart over the decade ended Dec. 31, 2022—second-most among all category groups behind real estate.
- ▶ Long-term success rates in the intermediate core bond category are generally lower than they were for the legacy category, which was more expansive and included active funds that had the latitude to take significantly more credit risk than their indexed peers. The passive funds in the category are now more representative of the opportunity set available to their active counterparts and thus a higher hurdle for core bond managers who hew more closely to standard benchmarks.

#### Exhibit 56 Intermediate Core Bond

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	124	97.6	32	100.0	-13.0	-13.1	-13.4	-13.3	37.9
3-Year	119	86.6	33	90.9	-2.1	-2.8	-2.6	-2.9	57.1
5-Year	119	73.1	28	92.9	0.4	0.0	-0.1	-0.2	38.7
10-Year	151	55.6	27	81.5	1.2	1.0	0.9	0.8	35.8
15-Year	204	35.8	20	60.0	2.4	2.6	2.2	2.4	23.0
20-Year	217	25.3	18	33.3	2.8	3.1	2.6	2.8	16.1
<b>Performance by Fee Quintile</b>									
(Trailing 10 Years)									
20th Percentile	25	64.0	6	100.0	1.5	1.0	1.3	1.0	60.0
40th Percentile	30	50.0	5	100.0	1.1	1.0	1.0	0.9	26.7
60th Percentile	31	64.5	5	80.0	1.2	0.6	1.0	0.8	48.4
80th Percentile	30	53.3	5	40.0	1.1	0.9	0.7	0.7	20.0
100th Percentile	31	41.9	6	83.3	1.0	0.7	0.5	0.4	19.4

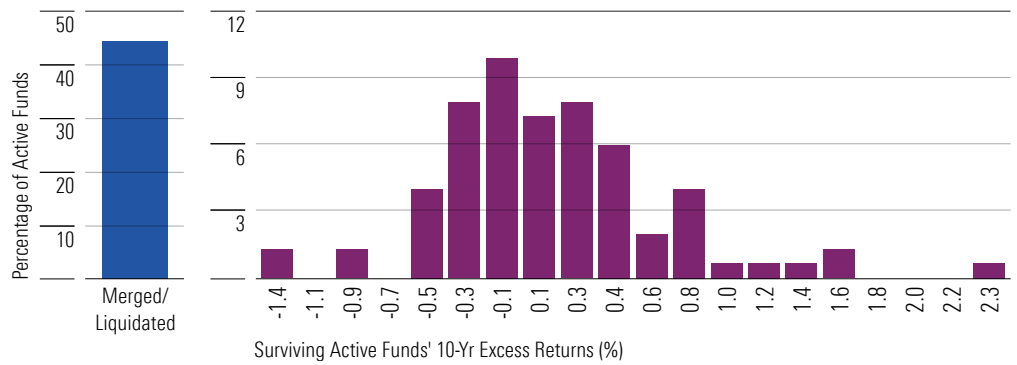
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 57** Rolling Success Rates for Surviving Active Intermediate Core Bond Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 58** Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Intermediate Core Bond Funds



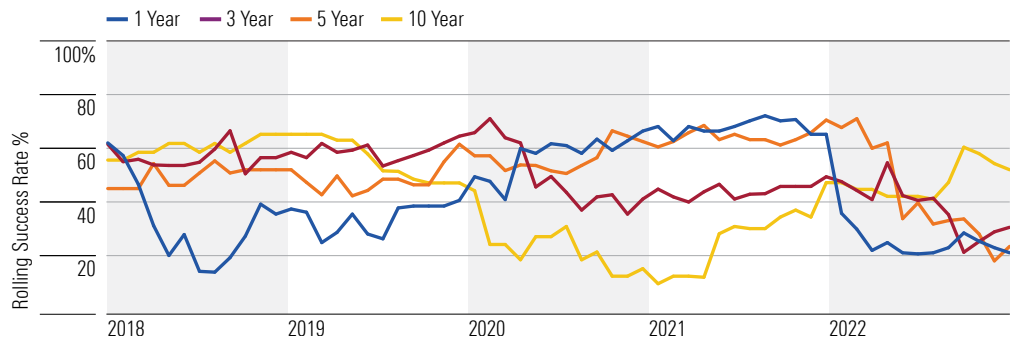
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 59 Corporate Bond**

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	53	98.1	28	100.0	-14.9	-15.3	-15.2	-15.1	22.6
3-Year	56	91.1	22	100.0	-2.5	-2.7	-2.3	-2.4	32.1
5-Year	56	83.9	24	79.2	0.2	0.6	0.4	0.6	25.0
10-Year	43	74.4	16	62.5	2.1	1.8	1.9	1.6	53.5
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	4	100.0	2	100.0	2.0	2.1	1.5	2.2	50.0
40th Percentile	6	66.7	4	100.0	2.7	1.9	2.4	1.9	66.7
60th Percentile	11	54.5	3	100.0	1.8	1.6	1.9	1.8	27.3
80th Percentile	8	75.0	1	100.0	2.0	1.6	1.7	1.6	62.5
100th Percentile	9	77.8	6	0.0	1.9	1.4	1.7	1.5	44.4

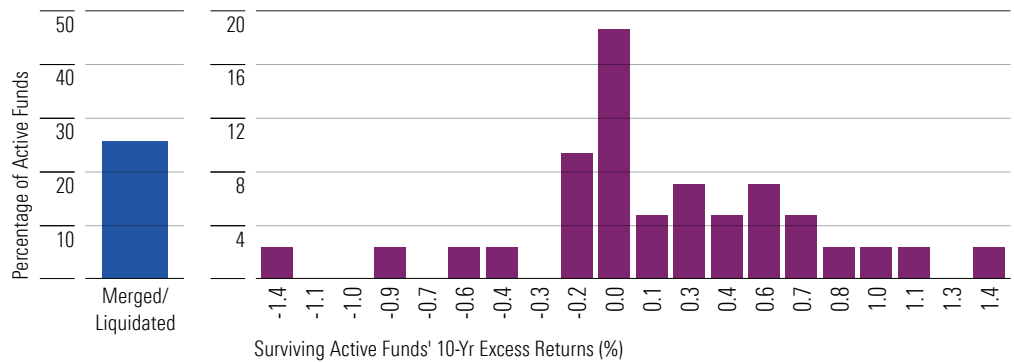
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 60 Rolling Success Rates for Surviving Active Corporate Bond Funds**



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 61 Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active Corporate Bond Funds**



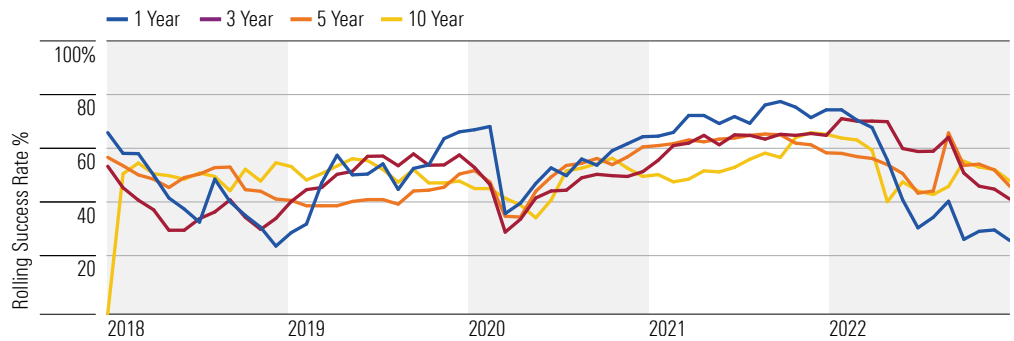
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 62 High-Yield Bond**

	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
<b>Trailing Total Return</b>									
1-Year	180	98.3	44	100.0	-10.3	-10.7	-10.3	-9.4	27.2
3-Year	190	88.4	39	82.1	0.0	-0.7	-0.4	-0.2	42.6
5-Year	192	80.7	24	75.0	2.1	1.6	1.5	1.5	47.4
10-Year	156	77.6	12	33.3	3.5	2.8	3.0	3.0	49.4
<b>Performance by Fee Quintile</b> (Trailing 10 Years)									
20th Percentile	27	77.8	2	50.0	4.0	2.6	3.6	2.9	70.4
40th Percentile	31	83.9	0	0.0	3.4	0.0	3.5	0.0	67.7
60th Percentile	33	66.7	0	0.0	3.3	0.0	2.6	0.0	42.4
80th Percentile	31	83.9	6	0.0	3.6	1.9	3.1	1.8	54.8
100th Percentile	30	76.7	4	75.0	3.1	2.9	2.4	3.1	16.7

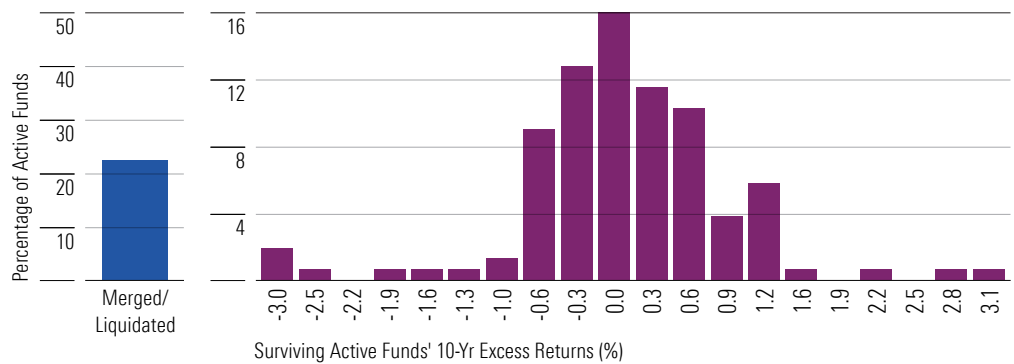
Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 63 Rolling Success Rates for Surviving Active High-Yield Bond Funds**



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

**Exhibit 64 Mortality and Distribution of 10-Year Annualized Excess Returns for Surviving Active High-Yield Bond Funds**



Source: Morningstar. Data and calculations as of Dec. 31, 2022.

## Appendix A

### Summary of Results for the Periods Ended June 30, 2022, and Dec. 31, 2021

**Exhibit 65** Summary Results for the Period Ended June 30, 2022

Category	Active Funds' Success Rates by Category (%)							10-Year	10-Year
	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year	(Lowest Cost)	(Highest Cost)	
U.S. Large Blend	44.0	34.4	24.8	11.8	10.9	10.4	18.4	5.2	
U.S. Large Value	34.5	31.7	27.7	15.8	11.1	19.3	24.6	11.7	
U.S. Large Growth	39.3	22.3	15.8	6.3	2.4	2.3	11.9	2.2	
U.S. Mid Blend	67.3	56.8	29.6	16.9	8.1	10.1	36.0	0.0	
U.S. Mid Value	31.2	45.9	31.8	2.8	18.4	—	4.8	0.0	
U.S. Mid Growth	45.9	40.5	54.1	40.0	21.0	—	46.5	30.2	
U.S. Small Blend	60.3	41.8	28.8	19.8	17.8	13.1	32.4	18.9	
U.S. Small Value	65.5	29.2	33.3	26.0	11.6	19.0	31.6	15.0	
U.S. Small Growth	43.3	47.4	54.1	44.2	24.9	—	48.8	43.2	
Foreign Large Blend	25.0	42.0	26.7	28.6	26.6	21.7	35.3	24.3	
Foreign Large Value	27.3	40.4	15.8	31.7	15.7	—	36.8	19.0	
Foreign Small-Mid Blend	25.9	30.3	13.3	28.6	—	—	50.0	40.0	
World Large Blend	36.1	20.5	17.8	20.4	—	—	20.0	20.0	
Diversified Emerging Markets	19.7	43.6	32.5	42.6	28.2	—	51.7	46.7	
Europe Stock	31.3	44.4	30.4	36.4	26.1	14.6	75.0	20.0	
U.S. Real Estate	78.6	76.2	64.6	50.7	27.3	25.9	50.0	35.7	
Global Real Estate	85.1	67.3	55.0	49.0	—	—	30.0	45.5	
Intermediate Core Bond	26.4	51.4	46.0	40.2	19.8	14.1	53.6	24.2	
Corporate Bond	22.2	42.1	41.2	43.6	—	—	33.3	75.0	
High-Yield Bond	31.9	60.3	44.8	45.6	—	—	61.5	31.0	

Source: Morningstar. Data and calculations as of Dec. 31, 2022.



**Exhibit 66** Summary Results for the Period Ended Dec. 31, 2021

Category	Active Funds' Success Rates by Category (%)						10-Year	10-Year
	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year	(Lowest Cost)	(Highest Cost)
U.S. Large Blend	45.5	36.7	23.2	12.1	9.7	11.0	20.0	3.8
U.S. Large Value	38.4	37.5	28.5	16.4	13.5	17.0	25.9	11.5
U.S. Large Growth	32.2	30.8	32.7	10.3	6.7	4.3	19.8	6.8
U.S. Mid Blend	66.0	40.5	19.7	16.4	7.2	7.8	32.0	0.0
U.S. Mid Value	30.8	57.7	38.9	11.6	23.9	—	9.1	33.3
U.S. Mid Growth	46.9	57.0	57.7	42.0	22.2	—	44.2	37.2
U.S. Small Blend	59.2	44.3	27.7	17.4	14.7	20.2	33.3	16.7
U.S. Small Value	38.8	41.0	37.4	23.0	22.3	16.2	15.0	10.0
U.S. Small Growth	47.4	67.5	56.4	44.2	28.3	—	50.0	47.7
Foreign Large Blend	44.0	54.2	42.7	32.4	30.3	25.0	47.1	21.6
Foreign Large Value	31.2	58.0	38.5	43.0	39.7	—	52.4	36.4
Foreign Small-Mid Blend	48.1	51.5	38.7	33.3	—	—	75.0	40.0
World Large Stock	38.5	28.0	23.3	21.3	—	—	20.0	20.0
Diversified Emerging Markets	30.9	63.1	52.4	53.5	41.8	—	63.0	57.1
Europe Stock	46.7	70.0	50.0	45.5	37.5	17.3	60.0	40.0
U.S. Real Estate	82.5	83.6	63.2	52.9	28.6	30.9	50.0	42.9
Global Real Estate	83.3	69.6	50.0	49.0	—	—	30.0	50.0
Intermediate Core Bond	70.1	51.7	48.1	35.5	20.7	14.2	44.8	16.7
Corporate Bond	66.7	50.9	72.0	48.7	—	—	33.3	62.5
High-Yield Bond	75.8	66.3	59.8	66.7	—	—	84.6	55.2

Source: Morningstar. Data and calculations as of Dec. 31, 2022.

## Appendix B — Methodology

### Data Source

Morningstar's U.S. open-end and exchange-traded funds database.

### Universe

All ETFs and open-end mutual funds (excluding funds of funds and money market funds) in each Morningstar Category that existed at the beginning of the relevant period (including funds that did not survive to the end of the period) defined the eligible universe. To be included, the fund's inception date must precede the start of the period and the obsolete date cannot predate the start of the period. In addition, each must have asset data for at least one share class in the month prior to the start of the sample period (the beginning of the trailing one-, three-, five-, 10-, 15-, or 20-year period) to facilitate asset weighting.

### Survivorship

To calculate survivorship, we divide the number of distinct funds (based on unique fund ID at the beginning of the period) that started and ended the period in question by the total number of funds that existed at the onset of the period in question (the beginning of the trailing one-, three-, five-, 10-, 15-, or 20-year period).

### Asset-Weighted Returns

We calculate the asset-weighted returns for each cohort using each share class' monthly assets and returns. When a fund becomes obsolete, its historical data remains in the sample. Funds that incept or migrate into the category after the start of the period are not included.

### Equal-Weighted Returns

In order to come up with a single return figure for funds with multiple share classes, we first calculate the asset-weighted average of all the fund's share classes. We then take the simple equal-weighted average of the monthly returns for each fund in the group and compound those returns over the sample period. As before, when a fund becomes obsolete, its historical data remains in the sample. Funds that incept or are moved into the category after the start of the period are not included.

### Success Rate

The success rate indicates what percentage of funds that started the sample period went on to survive and generate a return in excess of the equal-weighted average passive fund return over the period. This approach differs from the convention of using a single, representative index to gauge success. We do not consider magnitude of outperformance in defining success: A fund that just barely beat the passive alternative counts as much as a fund that significantly outperformed.

As in the equal-weighted return calculation, we calculate the asset-weighted average of all the fund's share classes to come up with a single return figure for funds with multiple share classes. We then rank the funds by their composite returns, count the number that rank higher than the equal-weighted average return for the passive funds in the category, and divide that number by the number of funds at the beginning of the period (using the same number from the denominator of the survivorship calculations).

### **Fees**

We rank each fund by its annual report expense ratio from the year prior to the start of the sample period and group them into quintiles. We then apply the same steps described above to calculate the success rates for funds in each quintile. To be counted in the starting number of funds used for purposes of calculating the survivorship and success rates, each fund must have an annual report expense ratio at the beginning of the sample period.

### **Excess Returns**

We measure surviving active funds' excess returns relative to the equal-weighted average passive fund return in each category.

## Appendix C—How Our Approach Compares With Others'

### How is our approach different from others'?

Our "benchmark" for measuring success is different from others'. We measure active managers' success relative to investable passive alternatives in the same category. For example, an active manager in the U.S. large-blend category is measured against a composite of the performance of its index mutual fund and ETF peers (for example, Vanguard Total Stock Market Index VTSMX, SPDR S&P 500 ETF SPY, and so on). Specifically, we calculate the equal- and asset-weighted performance of the cohort of index-tracking (that is, "passive") options in each category that we examine and use that figure as the hurdle that defines success or failure for the active funds in the same category. The magnitude of outperformance or underperformance does not influence the success rate. However, this data is reflected in the average return figures for the funds in each group, which we report separately.

We believe this is a better benchmark because it reflects the performance of actual investable options and not an index. One cannot directly invest in indexes. Their performance does not account for the real costs associated with replicating their performance and packaging and distributing them in an investable format. Also, the success rate for active managers can vary depending on one's choice of benchmark. For example, the rate of success among U.S. large-blend fund managers may vary depending on whether one uses the S&P 500 or the Russell 1000 Index as the basis for comparison. By using a composite of investable alternatives within funds' relevant categories as our benchmark, we account for the frictions involved in index investing (fees, as well as others) and we mitigate the effects that might stem from cherry-picking a single index as a benchmark. The net result is a much fairer comparison of how investors in actively managed funds have fared relative to those who have opted for a passive approach.

We measure each fund's performance based on the asset-weighted average performance of all of its share classes in calculating success rates. This approach reflects the experience of the average dollar invested in each fund. We then rank these composite fund returns from highest to lowest and count the number of funds with returns exceeding the equal-weighted average of the passive funds in the category. The success rates are defined as the ratio of these figures to the number of funds that existed at the beginning of the period. Given this unique approach, our field of study is narrower than others, as the universe of categories that contained a sufficient set of investable index-tracking funds was fairly narrow at the end of 2004. We expect the number of categories we include in this study will expand over time.

We cut along the lines of cost. Cost matters. Fees are one of the best predictors of future fund performance. We have sliced our universe into fee quintiles to highlight this relationship. ■■