
Morningstar's Active/Passive Barometer

March 2021

Morningstar Manager Research

Ben Johnson, CFA
Director of Global ETF Research
1 312 384-4077
ben.johnson@morningstar.com

Executive Summary

The Morningstar Active/Passive Barometer is a semiannual report that measures the performance of U.S. active funds against passive peers in their respective Morningstar Categories. The Active/Passive Barometer spans nearly 4,400 unique funds that accounted for approximately \$15.9 trillion in assets, or about 67% of the U.S. fund market, as of the end of 2020.

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

- ▶ It evaluates active funds against a composite of actual passive funds. In this way, the "benchmark" reflects the actual, net-of-fees performance of 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

- ▶ The coronavirus sell-off and subsequent rebound tested the narrative that active funds are generally better able to navigate market volatility than their index peers. As we documented in our midyear 2020 report, active funds' performance through the first half of the year showed that there's little merit to this notion. Across all 20 categories we examined, 51% of active funds both survived and outperformed their average index peer during the first half of the year.
- ▶ The full-year result for active funds wasn't much different. In 2020, just 49% of the nearly 3,500 active funds included in our analysis survived and outperformed their average passive counterpart.
- ▶ It was a difficult year for actively managed U.S. stock funds. Active funds' one-year success rates slipped in seven of the nine categories that constitute the Morningstar Style Box. Just 42% of active funds in these categories outperformed the average of their passive competition in 2020, down from 49% in 2019.
- ▶ Success rates across active U.S. large-cap funds were flat versus 2019, landing at 38%. Meanwhile success rates among actively managed mid- and small-cap funds slipped. Mid-cap managers' one-year success rate fell 19 percentage points to 46%, while small-cap managers' one-year success rate fell 14 percentage points to 45%.
- ▶ Value had an awful year, while growth had a great one. The Morningstar US Value Index lost 2.3% in 2020. The Morningstar US Growth Index gained 44.4%. The spread between the two styles' performance is evident in active stock-pickers' 2020 success rates. Active value managers' beat rates jumped 14 percentage points in 2020 to 56%, as their more-style-pure index competitors struggled. Success rates among growth-oriented managers dropped 16 percentage points relative to 2019, as their style-faithful passive peers got a lift from growth stocks' searing-hot performance.
- ▶ The one-year success rate for active funds in the intermediate core bond category jumped 17 percentage points versus 2019, clocking in at 53.7%. This figure was also 14 percentage points higher than what these funds registered through the first six months of 2020. The post-COVID-crisis rebound in credit markets was favorable for active funds in the category, which tend to take more credit risk than their indexed peers.
- ▶ In general, actively managed funds have failed to survive and beat their benchmarks, especially over longer time horizons; only 23% of all active funds topped the average of their passive rivals over the 10-year period ended December 2020; long-term success rates were generally higher among foreign-stock, 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 and foreign-stock categories we examined, where excess returns among surviving active managers skewed positive over the past decade.
- ▶ Our data suggests that the average active dollar outperformed the average active fund in all but five categories over the past 10 years; this implies that investors have favored cheaper, higher-quality funds (see Exhibit 4).
- ▶ The cheapest funds succeeded about twice as often as the priciest ones (a 34% success rate versus a 17% success rate) over the 10-year period ended Dec. 31, 2020. This not only reflects cost advantages but also differences in survival, as 63% of the cheapest funds survived, whereas 49% of the most expensive did so.

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	31.1	30.0	16.5	8.4	11.2	12.8	17.2	4.1
U.S. Large Value	52.1	35.6	20.3	14.0	15.4	16.8	26.2	9.2
U.S. Large Growth	34.4	37.0	20.6	9.3	10.9	11.3	17.6	6.6
U.S. Mid Blend	21.6	23.8	13.4	11.9	6.3	8.7	29.6	7.4
U.S. Mid Value	76.8	49.6	44.2	12.5	30.8	—	16.7	8.3
U.S. Mid Growth	42.6	59.5	54.6	40.7	30.5	—	47.8	33.3
U.S. Small Blend	29.4	19.5	16.8	12.7	10.0	29.6	27.0	11.1
U.S. Small Value	46.2	27.4	23.1	29.3	31.3	—	35.0	15.0
U.S. Small Growth	60.1	55.2	54.0	41.2	28.4	—	46.7	36.4
Foreign Large Blend	56.0	41.5	26.7	20.0	14.0	14.6	35.9	17.9
Foreign Large Value	80.2	41.3	24.2	31.7	—	—	42.9	23.8
Foreign Small-Mid Blend	25.0	11.8	11.5	22.2	—	—	25.0	0.0
World Large Stock	53.3	42.0	30.8	30.4	32.0	—	34.8	21.7
Diversified Emerging Markets	69.6	59.6	48.1	45.4	35.7	—	58.3	33.3
Europe Stock	73.7	48.1	37.5	32.4	30.6	—	42.9	0.0
U.S. Real Estate	71.1	67.5	53.2	45.0	27.5	28.6	62.5	25.0
Global Real Estate	75.0	60.3	38.5	48.1	—	—	45.5	45.5
Intermediate Core Bond	53.7	38.5	34.5	27.9	15.9	9.7	47.4	11.1
Corporate Bond	48.4	35.5	49.1	40.5	—	—	37.5	25.0
High-Yield Bond	54.8	46.2	59.0	42.3	—	—	59.5	40.5

Source: Morningstar. Data and calculations as of Dec. 31, 2020. *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 (%)

	2020	2019	Year-Over-Year Change
U.S. Large Blend	31.1	34.5	-3.4
U.S. Large Value	52.1	34.3	17.9
U.S. Large Growth	34.4	43.6	-9.2
U.S. Mid Blend	21.6	57.5	-35.9
U.S. Mid Value	76.8	58.8	18.0
U.S. Mid Growth	42.6	72.0	-29.4
U.S. Small Blend	29.4	46.2	-16.9
U.S. Small Value	46.2	46.6	-0.4
U.S. Small Growth	60.1	74.8	-14.7
Foreign Large Blend	56.0	58.4	-2.4
Foreign Large Value	80.2	29.6	50.6
Foreign Small-Mid Blend	25.0	54.8	-29.8
World Large Stock	53.3	53.7	-0.4
Diversified Emerging Markets	69.6	67.5	2.0
Europe Stock	73.7	52.6	21.1
U.S. Real Estate	71.1	70.0	1.1
Global Real Estate	75.0	66.0	9.0
Intermediate Core Bond	53.7	36.5	17.1
Corporate Bond	48.4	25.5	22.9
High-Yield Bond	54.8	59.6	-4.8

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

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

	2014		2015		2016		2017		2018		2019		2020		Trend
	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec	Jun	Dec		
U.S. Large Blend	31.7	40.3	30.4	20.8	25.5	46.9	39.2	35.1	31.1	32.3	34.5	36.1	31.1		
U.S. Large Value	13.2	47.5	33.1	14.4	20.1	59.0	40.3	36.4	30.1	34.4	34.3	42.1	30.1		
U.S. Large Growth	11.8	43.6	49.8	30.5	31.1	42.1	46.0	45.1	48.9	54.3	43.6	38.9	48.9		
U.S. Mid-Blend	35.0	42.1	41.4	26.8	24.4	40.3	30.0	23.7	31.4	46.3	57.5	34.7	31.4		
U.S. Mid-Value	23.6	63.6	53.1	12.6	20.5	53.1	42.3	31.5	22.0	32.0	58.8	72.7	22.0		
U.S. Mid-Growth	46.3	47.5	42.1	36.7	28.7	51.7	60.8	42.6	75.8	79.1	72.0	63.2	75.8		
U.S. Small Blend	37.4	40.3	53.1	46.7	35.9	32.0	42.9	24.7	21.3	45.3	46.2	25.6	21.3		
U.S. Small Value	25.5	44.4	68.7	28.7	15.1	55.9	57.6	30.4	15.9	45.1	46.6	40.0	15.9		
U.S. Small Growth	51.7	54.6	24.5	31.9	30.2	60.9	60.2	44.1	52.1	75.8	74.8	58.0	52.1		
Foreign Large Blend	42.2	54.0	61.6	36.9	33.0	53.0	59.1	31.3	18.5	29.8	58.4	50.8	18.5		
Foreign Large Value	29.3	88.3	89.2	37.0	14.7	47.9	71.6	40.7	14.5	8.5	29.6	66.3	14.5		
Foreign Small-Mid Bld	40.0	40.0	38.5	18.5	30.8	57.1	62.5	26.7	21.2	34.5	54.8	21.9	21.2		
World Large Stock	28.5	56.5	61.8	29.4	16.7	60.6	49.0	45.3	41.3	55.2	53.7	50.4	41.3		
Diversified Emg Mrkts	60.6	53.3	58.9	68.5	34.8	61.1	67.1	48.2	20.8	33.9	67.5	65.7	20.8		
Europe Stock	12.5	59.1	63.6	33.3	17.4	18.2	56.5	29.2	24.0	20.8	52.6	68.4	24.0		
U.S. Real Estate	75.8	85.1	83.8	64.7	4.3	14.5	32.4	39.4	23.9	56.9	70.0	76.0	23.9		
Global Real Estate	75.9	68.5	54.5	75.0	29.5	16.4	12.9	27.1	72.4	76.4	66.0	76.3	72.4		
Intermediate Core Bnd*	36.8	25.6	33.6	23.4	60.8	77.6	53.2	61.9	45.6	26.8	36.5	48.3	45.6		
Corporate Bond	46.2	28.3	31.9	42.6	67.3	76.0	73.5	48.1	28.6	13.2	25.5	36.1	28.6		
High-Yield Bond	54.9	48.6	41.7	19.2	50.5	70.7	76.5	43.2	28.8	37.7	59.6	47.9	28.8		

Source: Morningstar. Data and calculations as of Dec. 31, 2020.*Success rates for these periods have been recalculated to reflect the historical composition of the new intermediate core bond Morningstar Category.

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	12.4	11.4	1.0	13.8	13.5	0.3	1.4	2.1
U.S. Large Value	10.1	9.9	0.3	10.9	11.0	-0.1	0.8	1.1
U.S. Large Growth	15.5	14.2	1.3	17.6	17.0	0.6	2.1	2.8
U.S. Mid Blend	11.4	10.3	1.2	12.1	11.4	0.7	0.7	1.2
U.S. Mid Value	9.1	8.9	0.2	10.2	10.2	0.0	1.1	1.3
U.S. Mid Growth	13.9	13.1	0.8	13.4	12.7	0.7	-0.5	-0.4
U.S. Small Blend	10.4	9.8	0.6	11.6	11.1	0.5	1.3	1.3
U.S. Small Value	8.3	8.4	-0.2	9.2	8.6	0.6	0.9	0.2
U.S. Small Growth	14.1	13.3	0.7	13.5	12.8	0.7	-0.6	-0.5
Foreign Large Blend	6.8	5.3	1.5	5.5	5.3	0.2	-1.3	0.0
Foreign Large Value	5.3	4.5	0.8	4.9	4.1	0.8	-0.5	-0.5
Foreign Small-Mid Blend	6.1	6.5	-0.4	6.5	5.5	0.9	0.4	-0.9
World Large Stock	10.1	8.7	1.4	9.2	8.3	0.9	-0.9	-0.4
Diversified Emerging Markets	4.0	3.8	0.3	3.0	2.8	0.2	-1.0	-1.0
Europe Stock	6.3	6.6	-0.3	5.0	4.4	0.6	-1.3	-2.1
U.S. Real Estate	8.1	8.2	-0.1	8.4	7.6	0.8	0.3	-0.6
Global Real Estate	5.9	6.0	-0.1	4.8	5.1	-0.3	-1.1	-1.0
Intermediate Term Bond	4.9	4.7	0.3	4.7	4.6	0.1	-0.2	-0.1
Corporate Bond	6.1	5.7	0.4	5.7	5.6	0.0	-0.4	0.0
High-Yield Bond	5.9	5.8	0.2	5.6	5.7	-0.1	-0.4	-0.1

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Results by Category

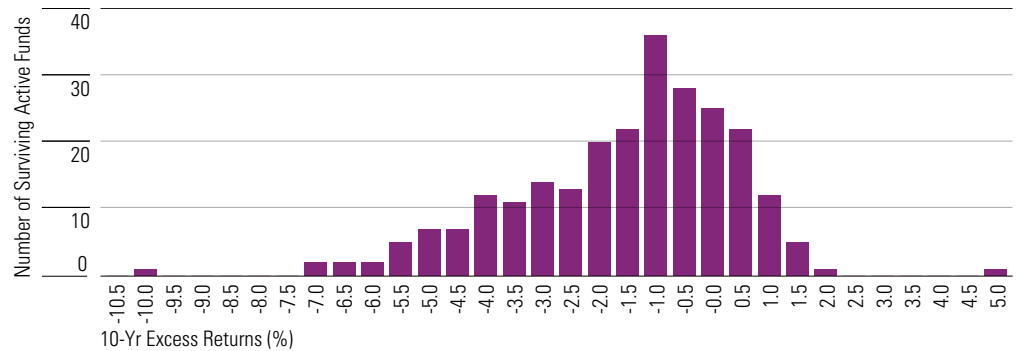
U.S. Large-Cap Funds

- ▶ Actively managed U.S. large-cap equity funds have generally succeeded less often than active U.S. mid- and small-cap funds over the long haul. This also applied in 2020. Just 38% of active large-cap funds lived and outperformed their average passive peer versus 46% and 45% for active mid-cap and small-cap funds, respectively.
- ▶ The large-growth category has been particularly difficult for active managers. Nearly two thirds of the active funds that existed in this category 20 years ago have died, and just 11.3% managed to both survive and outperform their average passively managed peer.
- ▶ The divergence in growth and value funds' one-year success rates may be evidence of "Dunn's Law" in action. Value had an awful year, while growth had a great one. The Morningstar US Value Index lost 2.3% in 2020. The Morningstar US Growth Index gained 44.4%. The spread between the two styles' performance is evident in active stock-pickers' 2020 success rates. Large-value managers' beat rates jumped nearly 18 percentage points in 2020 to 52%, as their more-style-pure index competitors struggled. Success rates among large-growth managers dropped more than 9 percentage points relative to 2019, as their style-faithful passive peers got a lift from growth stocks' searing-hot performance.
- ▶ Attrition rates are high among large-cap funds. Overall, just 34% of large-cap funds survived the 20-year period ended Dec. 31, 2020. The odds of survival improved to about 47% for the lowest-cost funds but sagged to 22% for the highest-cost funds during that same time frame.
- ▶ Pricey active large-cap funds are doomed to failure: Just 6% of these funds beat their passive composite over the decade ended Dec. 31, 2020.
- ▶ At 43%, passively managed large-blend funds had the second-lowest 20-year survivorship rate of any U.S. equity category for which we have 20 years of data. This was driven largely by a washout of the most expensive passive options in this category. Of the 48 index funds that occupied the most expensive two quintiles of the group two decades ago, just half survived through 2020.
- ▶ Investors 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 nearly all the categories and time horizons we examined.
- ▶ 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 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 (%)	
Trailing Total Return									
1-Year	389	92.0	195	95.4	16.3	18.9	14.3	17.3	31.1
3-Year	393	82.7	175	85.1	12.4	14.2	10.8	13.0	30.0
5-Year	411	67.6	133	79.7	13.8	15.2	12.3	14.6	16.5
10-Year	491	50.5	120	66.7	12.4	13.8	11.4	13.5	8.4
15-Year	475	40.0	106	56.6	8.8	9.9	8.5	9.6	11.2
20-Year	374	31.0	86	43.0	7.1	7.5	6.8	7.2	12.8
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	99	48.5	24	75.0	12.5	13.8	12.4	13.8	17.2
40th Percentile	98	55.1	24	75.0	12.0	13.5	12.1	13.9	9.2
60th Percentile	98	55.1	24	83.3	11.6	13.3	11.1	13.4	4.1
80th Percentile	98	55.1	25	52.0	11.2	13.4	11.0	13.1	7.1
100th Percentile	98	38.8	23	47.8	8.9	12.0	9.6	12.3	4.1

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

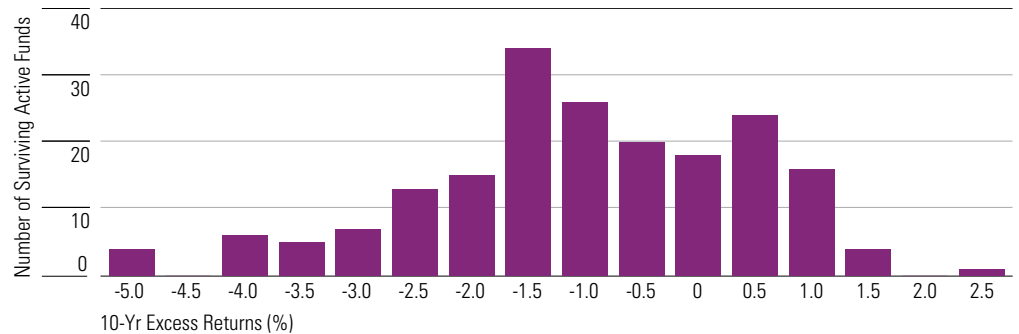
Exhibit 6 Distribution of 10-Year Annualized Excess Returns for Surviving Active Large-Blend Funds

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 7 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 (%)	
Trailing Total Return									
1-Year	326	92.3	110	90.9	2.8	2.7	3.9	2.0	52.1
3-Year	337	82.2	84	90.5	6.0	6.6	6.0	6.0	35.6
5-Year	354	71.8	62	93.5	9.8	10.5	9.6	10.4	20.3
10-Year	322	59.9	38	89.5	10.1	10.9	9.9	11.0	14.0
15-Year	356	45.8	19	68.4	7.3	7.8	7.1	7.7	15.4
20-Year	304	36.8	5	20.0	6.7	6.6	6.6	6.6	16.8
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	65	64.6	10	90.0	11.0	11.0	10.5	10.9	26.2
40th Percentile	65	61.5	5	100.0	10.1	11.4	9.5	11.1	10.8
60th Percentile	63	54.0	8	100.0	8.8	11.0	9.3	10.7	9.5
80th Percentile	64	67.2	7	100.0	9.6	10.4	9.5	11.2	14.1
100th Percentile	65	52.3	8	62.5	9.2	11.1	8.7	11.0	9.2

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 8 Distribution of 10-Year Annualized Excess Returns for Surviving Active Large-Value Funds

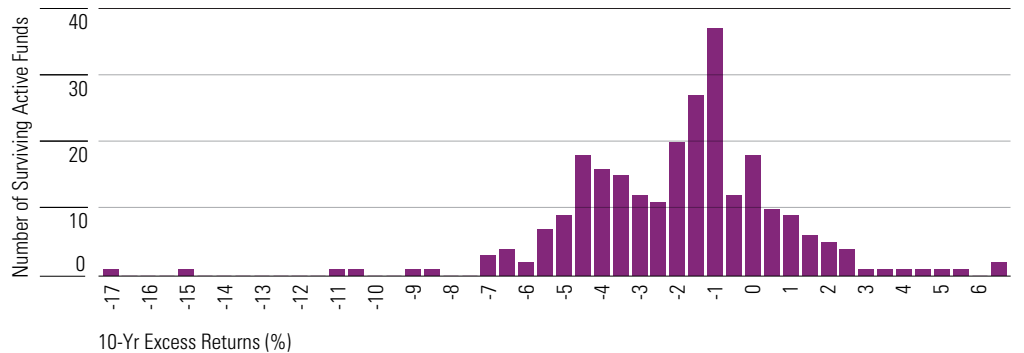
Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 9 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 (%)	
Trailing Total Return									
1-Year	395	94.9	69	94.2	35.6	39.9	32.2	36.1	34.4
3-Year	395	87.1	57	89.5	20.6	23.2	18.9	21.1	37.0
5-Year	428	73.1	52	86.5	18.7	20.8	17.0	19.7	20.6
10-Year	453	57.2	34	91.2	15.5	17.6	14.2	17.0	9.3
15-Year	422	39.6	27	77.8	11.2	12.8	10.4	12.2	10.9
20-Year	326	33.4	6	50.0	7.5	8.1	7.0	8.2	11.3
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	91	60.4	9	100.0	15.8	17.8	15.3	17.3	17.6
40th Percentile	90	63.3	6	100.0	15.5	16.5	14.5	16.6	6.7
60th Percentile	91	56.0	6	83.3	16.5	16.8	14.7	17.3	11.0
80th Percentile	90	52.2	6	66.7	14.1	16.0	14.0	16.6	4.4
100th Percentile	91	53.8	7	100.0	14.5	18.5	13.8	16.8	6.6

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 10 Distribution of 10-Year Annualized Excess Returns for Surviving Active Large-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2020.

U.S. Mid-Cap Funds

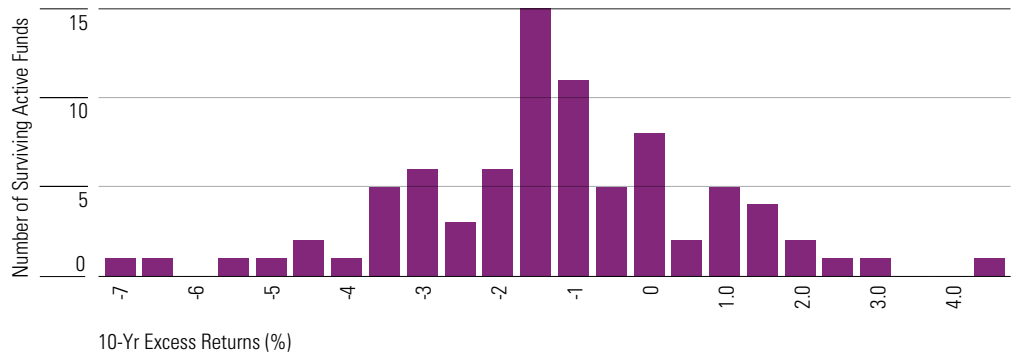
- ▶ Less than half (46%) of active mid-cap funds beat their average passive counterpart in 2020.
- ▶ Active mid-cap value funds had the highest success rate of any of the nine mainline U.S. equity categories in 2020. More than three fourths of them beat their average passive peer during the year. Success rates were lifted by the relative outperformance of large caps versus small caps and growth versus value over this span — which rewarded stock-pickers for their out-of-style bets.
- ▶ 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 11 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 (%)	
Trailing Total Return									
1-Year	111	91.0	61	90.2	14.5	20.3	11.4	15.1	21.6
3-Year	122	77.9	58	87.9	8.5	11.8	7.2	9.2	23.8
5-Year	119	67.2	51	80.4	11.3	13.8	10.0	12.5	13.4
10-Year	134	61.2	36	72.2	11.4	12.1	10.3	11.4	11.9
15-Year	144	53.5	26	61.5	8.7	9.7	8.2	9.3	6.3
20-Year	103	34.0	12	66.7	7.5	8.4	7.8	9.0	8.7
Performance by Fee Quintile									
(Trailing 10 Years)									
20th Percentile	27	81.5	8	62.5	11.7	12.3	11.3	12.0	29.6
40th Percentile	27	77.8	7	85.7	9.6	11.2	10.3	11.3	14.8
60th Percentile	26	46.2	7	85.7	9.5	11.6	9.0	11.8	0.0
80th Percentile	27	55.6	9	55.6	8.2	11.0	8.7	11.5	7.4
100th Percentile	27	44.4	5	80.0	8.9	10.7	8.3	9.9	7.4

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 12 Distribution of 10-Year Annualized Excess Returns for Surviving Active Mid-Blend Funds



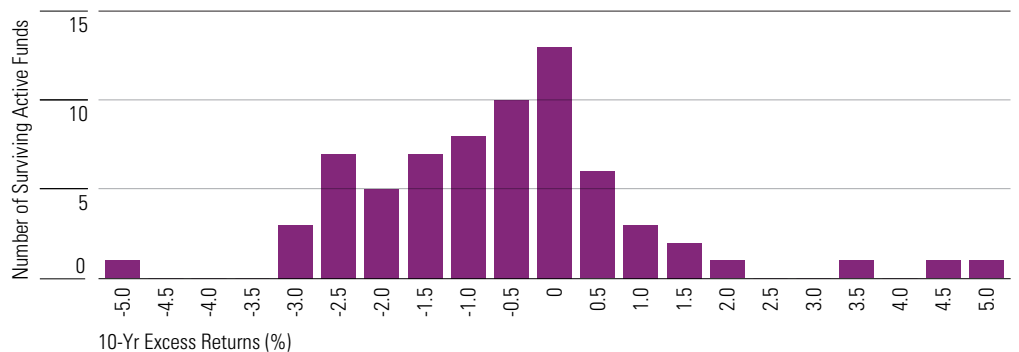
Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 13 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 (%)	
Trailing Total Return									
1-Year	112	92.9	29	89.7	5.0	1.5	4.2	-1.1	76.8
3-Year	115	80.9	25	100.0	4.9	4.0	4.2	3.7	49.6
5-Year	113	76.1	23	91.3	9.3	9.2	8.7	9.1	44.2
10-Year	120	57.5	15	93.3	9.1	10.2	8.9	10.2	12.5
15-Year	107	57.0	9	88.9	7.0	7.4	7.3	7.2	30.8
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	24	58.3	3	100.0	9.6	10.3	9.2	10.4	16.7
40th Percentile	24	62.5	3	100.0	8.8	10.2	8.9	10.0	4.2
60th Percentile	24	66.7	3	100.0	9.6	10.4	9.1	10.9	12.5
80th Percentile	24	62.5	3	66.7	8.1	10.9	9.1	11.1	20.8
100th Percentile	24	37.5	3	100.0	9.6	8.9	9.0	8.5	8.3

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 14 Distribution of 10-Year Annualized Excess Returns for Surviving Active Mid-Value Funds



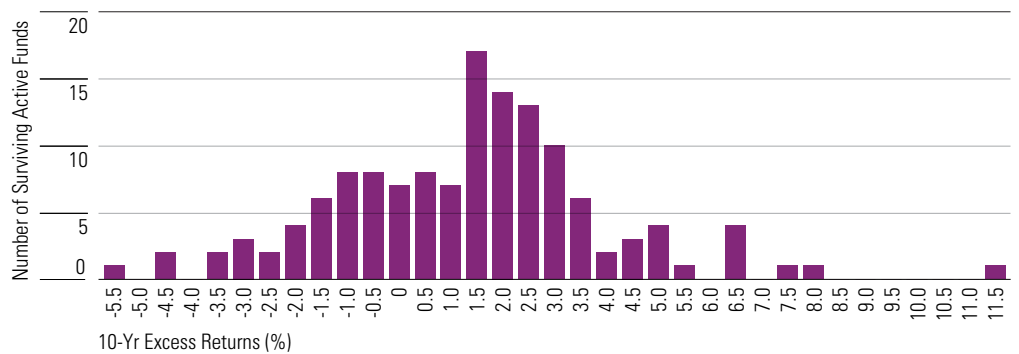
Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 15 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 (%)	
Trailing Total Return									
1-Year	190	95.8	32	90.6	33.8	32.5	34.6	35.6	42.6
3-Year	185	86.5	29	86.2	18.9	16.7	17.8	16.2	59.5
5-Year	207	76.3	24	79.2	17.5	15.8	16.8	15.7	54.6
10-Year	226	59.7	19	73.7	13.9	13.4	13.1	12.7	40.7
15-Year	275	42.2	9	77.8	10.8	10.5	10.3	9.6	30.5
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	46	73.9	4	100.0	13.5	13.7	13.4	13.3	47.8
40th Percentile	45	68.9	4	50.0	13.0	12.5	13.2	13.2	48.9
60th Percentile	45	55.6	3	66.7	13.6	12.3	12.9	12.4	37.8
80th Percentile	45	46.7	5	60.0	14.4	13.6	13.7	12.5	35.6
100th Percentile	45	53.3	3	100.0	14.8	13.0	12.2	11.3	33.3

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 16 Distribution of 10-Year Annualized Excess Returns for Surviving Active Mid-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2020.

U.S. Small-Cap Funds

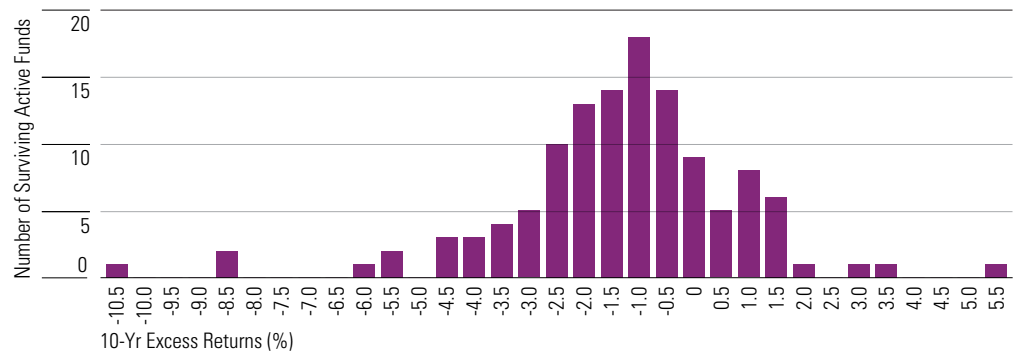
- ▶ Less than half (45%) of all active small-cap funds outperformed their average passive peer in 2020.
- ▶ Long-run success rates among actively managed U.S. small-cap funds have generally been higher than those seen among large-cap funds, though not materially so.
- ▶ Small-cap managers' higher long-term success rates can be explained in part by their staying power. At 51%, active small-cap funds' 15-year survivorship rate is higher than it is for large-cap funds (42%) and mid-cap funds (48%).

Exhibit 17 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 (%)	
Trailing Total Return									
1-Year	201	92.5	68	98.5	13.2	17.4	10.5	14.5	29.4
3-Year	231	77.1	59	89.8	7.1	9.8	6.1	8.7	19.5
5-Year	220	70.9	52	78.8	11.0	13.0	10.1	12.3	16.8
10-Year	181	67.4	33	78.8	10.4	11.6	9.8	11.1	12.7
15-Year	170	51.2	27	66.7	8.3	9.3	7.6	8.6	10.0
20-Year	108	53.7	14	50.0	8.8	9.0	8.7	8.9	29.6
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	37	83.8	7	85.7	10.9	11.6	10.6	11.5	27.0
40th Percentile	36	63.9	6	83.3	10.3	11.1	9.4	10.8	8.3
60th Percentile	36	66.7	7	85.7	7.9	11.0	8.7	10.9	2.8
80th Percentile	36	61.1	6	83.3	8.3	10.5	9.3	10.4	13.9
100th Percentile	36	61.1	7	57.1	7.9	10.2	7.0	10.1	11.1

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 18 Distribution of 10-Year Annualized Excess Returns for Surviving Active Small-Blend Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 19 U.S. Small Value

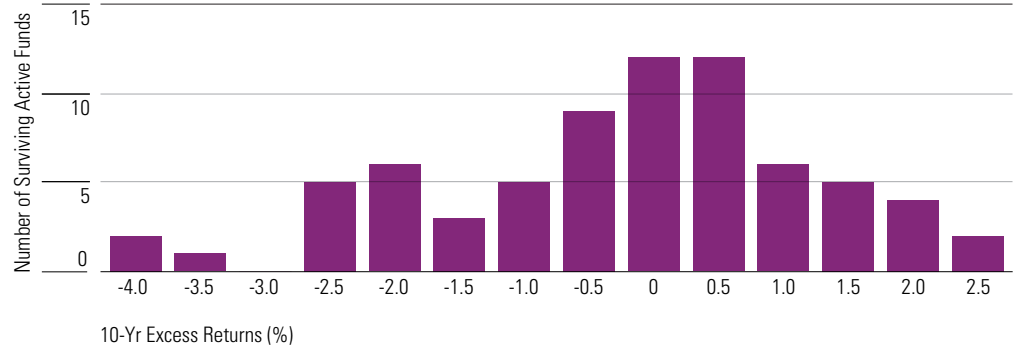
	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	117	88.9	26	92.3	2.0	4.1	4.1	3.4	46.2
3-Year	113	80.5	26	96.2	2.2	3.8	2.1	2.9	27.4
5-Year	117	80.3	22	90.9	8.3	9.5	8.3	8.9	23.1
10-Year	99	72.7	17	82.4	8.3	9.2	8.4	8.6	29.3
15-Year	115	59.1	9	88.9	7.3	7.4	7.3	7.0	31.3

Performance by Fee Quintile

(Trailing 10 Years)

20th Percentile	20	70.0	4	100.0	8.2	9.5	8.2	9.8	35.0
40th Percentile	20	90.0	3	100.0	8.0	8.3	7.8	7.9	30.0
60th Percentile	19	63.2	3	100.0	8.3	10.3	8.2	10.6	36.8
80th Percentile	20	70.0	3	33.3	8.7	5.8	7.7	6.8	30.0
100th Percentile	20	70.0	4	75.0	7.9	6.3	7.5	6.7	15.0

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 20 Distribution of 10-Year Annualized Excess Returns for Surviving Active Small-Value Funds

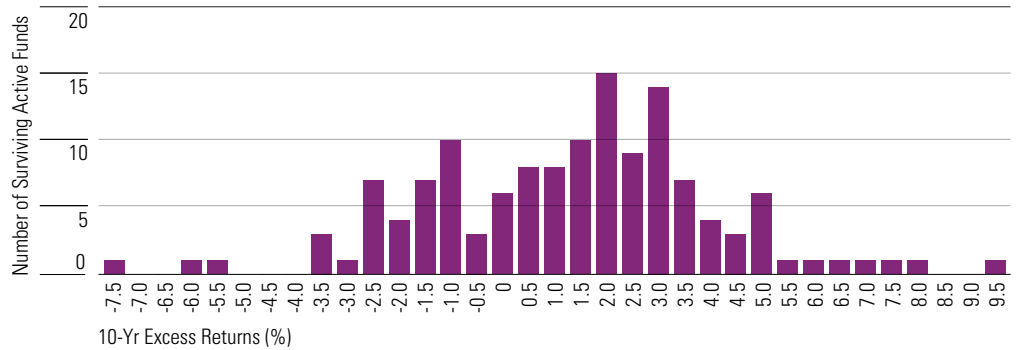
Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 21 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 (%)	
Trailing Total Return									
1-Year	198	93.4	15	100.0	34.3	33.0	34.8	29.7	60.1
3-Year	212	85.4	14	100.0	18.7	16.7	17.0	14.9	55.2
5-Year	213	77.0	14	100.0	17.9	16.7	16.8	15.1	54.0
10-Year	221	61.1	10	100.0	14.1	13.5	13.3	12.8	41.2
15-Year	257	46.3	9	88.9	10.7	10.9	10.2	10.3	28.4
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	45	77.8	4	100.0	15.4	13.6	13.5	13.6	46.7
40th Percentile	44	63.6	0	0.0	13.9	-	13.9	-	45.5
60th Percentile	44	61.4	2	100.0	13.6	13.0	13.3	13.1	43.2
80th Percentile	44	52.3	2	100.0	14.1	9.5	12.6	10.2	34.1
100th Percentile	44	50.0	2	100.0	15.0	10.7	13.5	10.6	36.4

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 22 Distribution of 10-Year Annualized Excess Returns for Surviving Active Small-Growth Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2020.

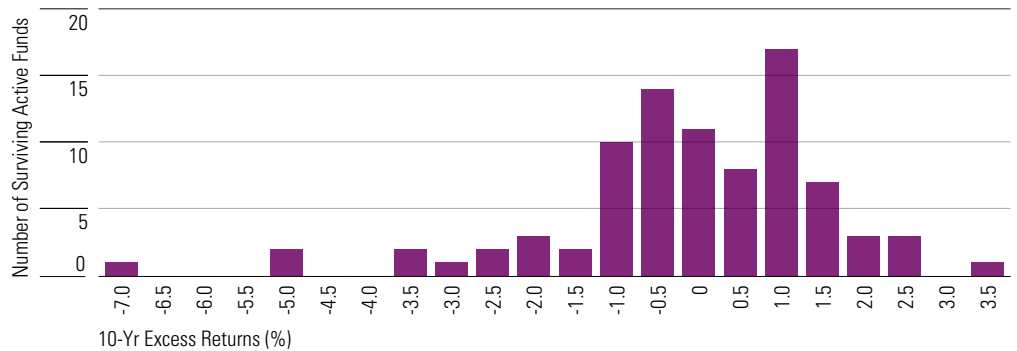
Foreign Stock

- ▶ A majority (61%) of active foreign-stock funds outperformed their average passive peer in 2020.
- ▶ Actively managed funds in the foreign large-value category saw their success rate spike higher, jumping more than 50 percentage points versus 2019 to 80.2%. Value's woes weren't a strictly U.S. phenomenon in 2020 and disproportionately affected more style-pure index funds than their active peers in this category. This is evident in the equal-weighted one-year returns for active (2.8%) and passive (negative 2.5%) funds in this group.
- ▶ The foreign-stock categories tend to be more target rich for active managers. At 30%, foreign stock funds' 10-year active success rate was materially higher than that of U.S. stock funds (18%).
- ▶ The median 10-year excess return for surviving active managers was positive in four of the six foreign-stock categories we examined—a much more appealing payout profile for investors relative to U.S. stock funds.
- ▶ The difference between 10-year asset-weighted returns for passive and active funds in five of the six categories was negative. This indicates that investors generally achieved better outcomes with active funds within these categories.

Exhibit 23 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 (%)	
Trailing Total Return									
1-Year	200	93.5	93	98.9	11.2	9.9	10.2	8.0	56.0
3-Year	195	78.5	85	90.6	5.4	4.8	4.1	4.3	41.5
5-Year	187	65.2	62	85.5	8.8	8.4	7.5	8.0	26.7
10-Year	195	44.6	35	57.1	6.8	5.5	5.3	5.3	20.0
15-Year	157	35.7	19	52.6	5.7	4.7	4.5	4.6	14.0
20-Year	157	27.4	13	30.8	5.0	4.7	4.6	4.3	14.6
Performance by Fee Quintile									
(Trailing 10 Years)									
20th Percentile	39	48.7	7	71.4	5.9	5.6	5.6	5.5	35.9
40th Percentile	39	53.8	9	66.7	5.7	5.3	5.4	5.2	25.6
60th Percentile	39	41.0	5	60.0	5.2	5.4	5.1	5.3	17.9
80th Percentile	39	30.8	7	57.1	5.0	5.0	4.5	4.9	2.6
100th Percentile	39	48.7	7	28.6	4.6	5.1	3.9	4.7	17.9

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

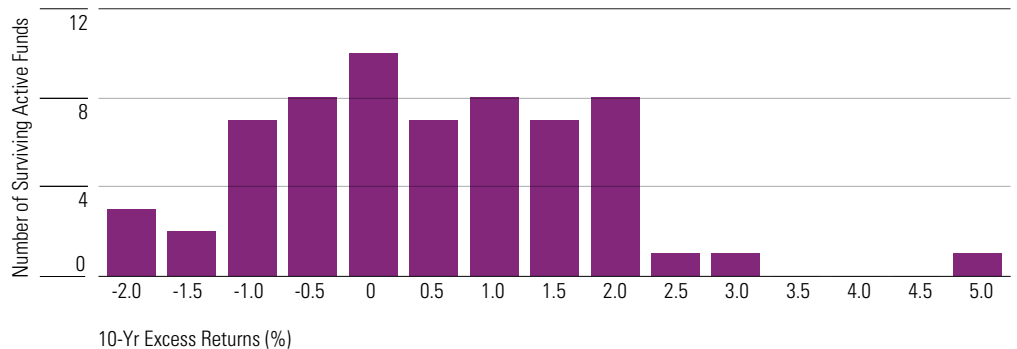
Exhibit 24 Distribution of 10-Year Annualized Excess Returns for Surviving Active Foreign Large-Blend Funds

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 25 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 (%)	
Trailing Total Return									
1-Year	96	92.7	41	90.2	2.8	-1.3	2.8	-2.5	80.2
3-Year	92	83.7	31	90.3	1.0	0.6	0.9	0.6	41.3
5-Year	99	73.7	26	69.2	5.9	5.7	5.8	6.0	24.2
10-Year	104	60.6	13	84.6	5.3	4.9	4.5	4.1	31.7
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	21	71.4	3	100.0	4.6	3.6	4.2	4.1	42.9
40th Percentile	21	57.1	2	100.0	4.3	4.4	4.2	4.4	23.8
60th Percentile	20	75.0	3	66.7	5.0	4.0	4.3	3.6	45.0
80th Percentile	21	57.1	2	50.0	5.8	1.4	3.8	2.3	23.8
100th Percentile	21	42.9	3	100.0	4.1	3.9	4.1	3.7	23.8

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 26 Distribution of 10-Year Annualized Excess Returns for Surviving Active Foreign Large-Value Funds

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 27 Foreign Small/Mid-Blend

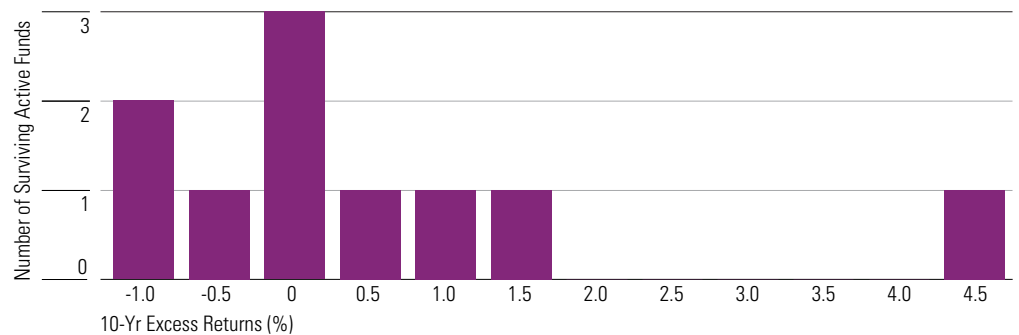
	Active Funds		Passive Funds		Asset-Weighted Performance		Equal-Weighted Performance		Active Success Rate (%)
	# at Beginning of Period	Survivorship Rate (%)	# at Beginning of Period	Survivorship Rate (%)	Active (%)	Passive (%)	Active (%)	Passive (%)	
Trailing Total Return									
1-Year	32	81.3	10	90.0	10.2	11.8	11.0	12.2	25.0
3-Year	34	58.8	9	88.9	2.9	4.1	2.9	4.2	11.8
5-Year	26	57.7	10	90.0	7.9	9.0	8.0	9.1	11.5
10-Year	18	55.6	10	50.0	6.1	6.5	6.5	5.5	22.2

Performance by Fee Quintile

(Trailing 10 Years)

20th Percentile	4	25.0	2	100.0	6.6	5.1	6.0	5.2	25.0
40th Percentile	3	100.0	2	50.0	5.8	7.8	5.4	6.9	66.7
60th Percentile	4	75.0	2	50.0	5.0	7.6	5.2	7.7	0.0
80th Percentile	3	33.3	2	50.0	8.3	5.9	8.3	6.1	33.3
100th Percentile	4	50.0	2	0.0	5.3	-3.7	6.2	-3.4	0.0

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 28 Distribution of 10-Year Annualized Excess Returns for Surviving Active Foreign Small/Mid-Blend Funds

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 29 World Large 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 (%)	
Trailing Total Return									
1-Year	270	91.5	35	80.0	22.3	13.3	16.3	11.8	53.3
3-Year	269	80.3	35	71.4	12.1	9.3	9.5	8.2	42.0
5-Year	279	65.2	21	81.0	13.2	12.1	11.3	11.2	30.8
10-Year	227	47.1	11	81.8	10.1	9.2	8.7	8.3	30.4
15-Year	97	46.4	3	100	7.2	7.5	6.7	6.6	32.0

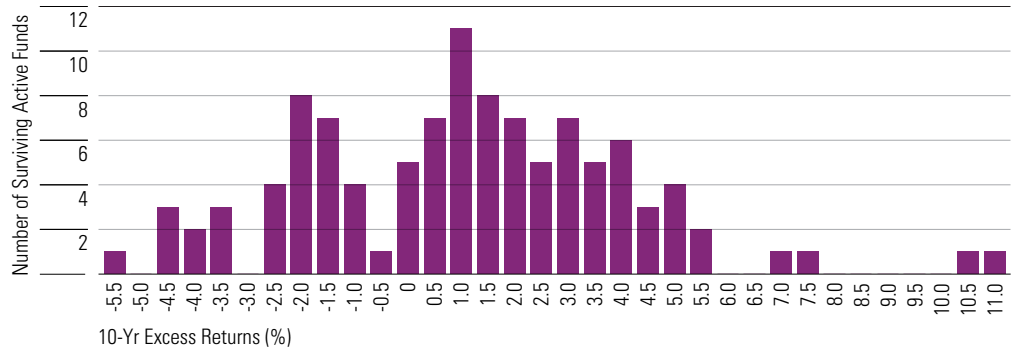
Performance by Fee Quintile

(Trailing 10 Years)

20th Percentile	46	47.8	3	100.0	10.5	9.5	9.6	8.1	34.8
40th Percentile	45	44.4	2	100.0	8.0	9.3	9.0	9.6	26.7
60th Percentile	45	53.3	2	100.0	8.8	10.0	8.7	9.0	35.6
80th Percentile	45	44.4	2	50.0	6.9	2.3	8.7	3.2	33.3
100th Percentile	46	45.7	2	50.0	7.7	8.7	7.4	9.1	21.7

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 30 Distribution of 10-Year Annualized Excess Returns for Surviving Active World Large-Stock Funds

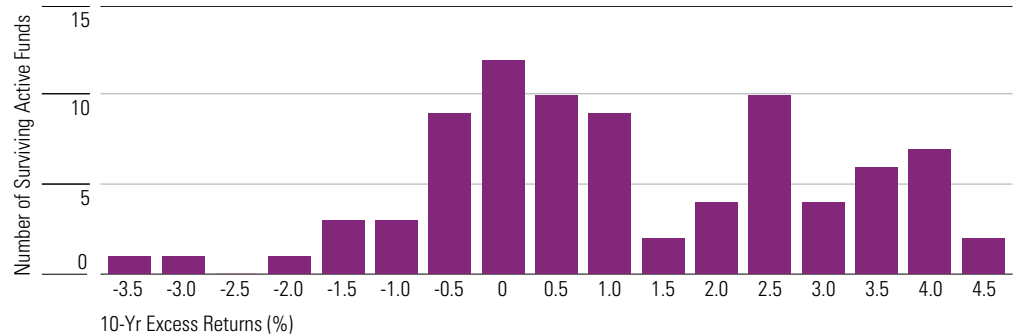


Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 31 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 (%)	
Trailing Total Return									
1-Year	253	88.9	80	90.0	18.4	16.0	18.6	11.4	69.6
3-Year	245	80.4	70	84.3	6.7	5.6	6.0	3.7	59.6
5-Year	237	71.3	60	75.0	12.8	11.9	11.8	10.6	48.1
10-Year	119	70.6	34	44.1	4.0	3.0	3.8	2.8	45.4
15-Year	70	68.6	4	75.0	6.7	6.0	6.5	6.4	35.7
Performance by Fee Quintile									
(Trailing 10 Years)									
20th Percentile	24	87.5	8	62.5	4.2	3.2	4.0	3.7	58.3
40th Percentile	24	70.8	7	14.3	4.0	2.7	3.6	2.2	37.5
60th Percentile	23	65.2	5	80.0	3.4	2.7	3.1	2.0	43.5
80th Percentile	24	70.8	7	42.9	4.2	2.7	4.0	2.7	54.2
100th Percentile	24	58.3	7	28.6	3.7	1.2	2.9	1.8	33.3

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

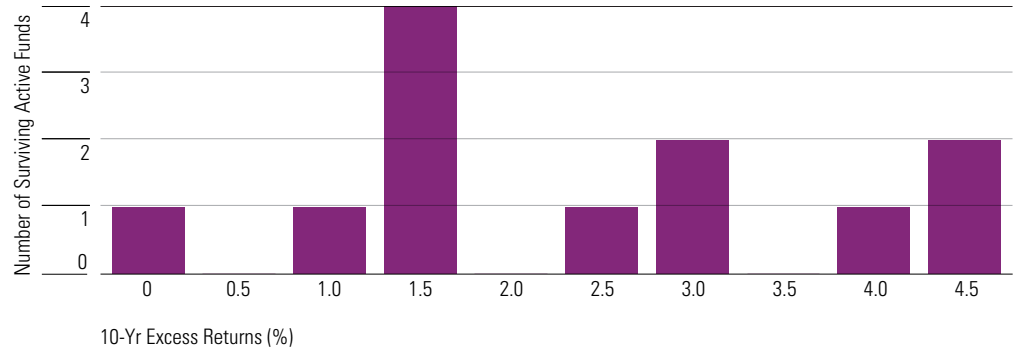
Exhibit 32 Distribution of 10-Year Annualized Excess Returns for Surviving Active Diversified Emerg-Mrkt Funds

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 33 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 (%)	
Trailing Total Return									
1-Year	19	89.5	33	81.8	9.4	5.5	12.7	3.3	73.7
3-Year	27	70.4	36	69.4	5.0	3.9	5.8	3.3	48.1
5-Year	24	66.7	27	70.4	7.2	7.3	8.0	6.6	37.5
10-Year	34	35.3	28	32.1	6.3	5.0	6.6	4.4	32.4
10-Year	36	30.6	17	35.3	4.9	4.7	5.5	3.7	30.6
Performance by Fee Quintile									
(Trailing 10 Years)									
20th Percentile	7	42.9	6	50.0	6.3	5.6	7.2	5.0	42.9
40th Percentile	7	28.6	7	0.0	4.2	1.3	4.6	1.8	14.3
60th Percentile	6	83.3	6	16.7	5.4	4.8	6.0	4.7	83.3
80th Percentile	7	28.6	4	75.0	5.1	5.2	5.6	5.1	28.6
100th Percentile	7	0.0	5	40.0	2.3	-0.2	2.0	1.2	0.0

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 34 Distribution of 10-Year Annualized Excess Returns for Surviving Active Europe-Stock Funds

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Real Estate

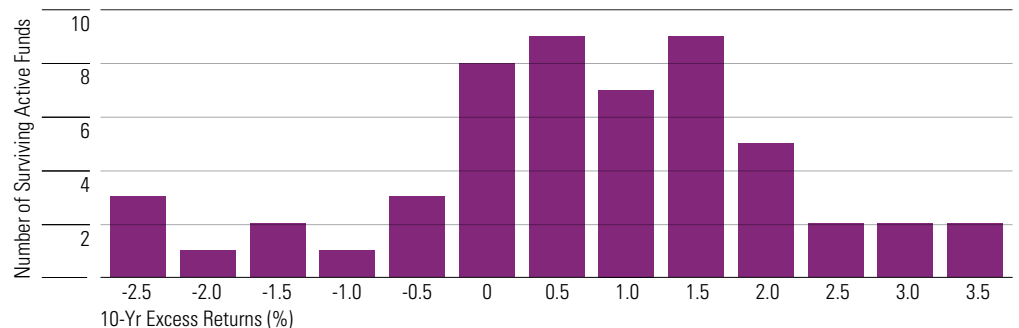
- ▶ Nearly 73% of active real estate funds beat their average passive peer during 2020. However, investors in those funds might not count losing less as a victory. Equal-weighted returns for active and passive funds were firmly negative in both the U.S. and global real estate categories in 2020.
- ▶ 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 35 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 (%)	
Trailing Total Return									
1-Year	76	92.1	29	93.1	-7.2	-6.2	-4.2	-7.6	71.1
3-Year	80	81.3	25	92.0	3.8	4.3	4.6	2.6	67.5
5-Year	79	74.7	19	94.7	4.7	5.2	5.4	4.5	53.2
10-Year	80	67.5	12	66.7	8.1	8.4	8.2	7.6	45.0
15-Year	80	52.5	5	80.0	5.6	6.6	5.9	6.1	27.5
20-Year	56	46.4	3	33.3	8.6	9.3	9.1	9.1	28.6
Performance by Fee Quintile									
(Trailing 10 Years)									
20th Percentile	16	75.0	3	66.7	8.7	8.6	8.5	8.0	62.5
40th Percentile	16	62.5	2	100.0	8.4	8.3	8.2	8.4	37.5
60th Percentile	16	75.0	6	50	7.5	7	7.6	8	56.3
80th Percentile	16	62.5	—	—	8.1	—	7.8	—	43.8
100th Percentile	16	62.5	1	100.0	9.1	7.6	7.9	7.6	25.0

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 36 Distribution of 10-Year Annualized Excess Returns for Surviving Active U.S. Real Estate Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 37 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 (%)	
Trailing Total Return									
1-Year	60	91.7	14	92.9	-5.7	-8.3	-4.5	-8.7	75.0
3-Year	63	76.2	15	80.0	3.0	1.2	3.1	1.4	60.3
5-Year	65	69.2	14	78.6	4.8	4.3	5.2	5.1	38.5
10-Year	52	59.6	11	72.7	5.9	4.8	6.0	5.1	48.1

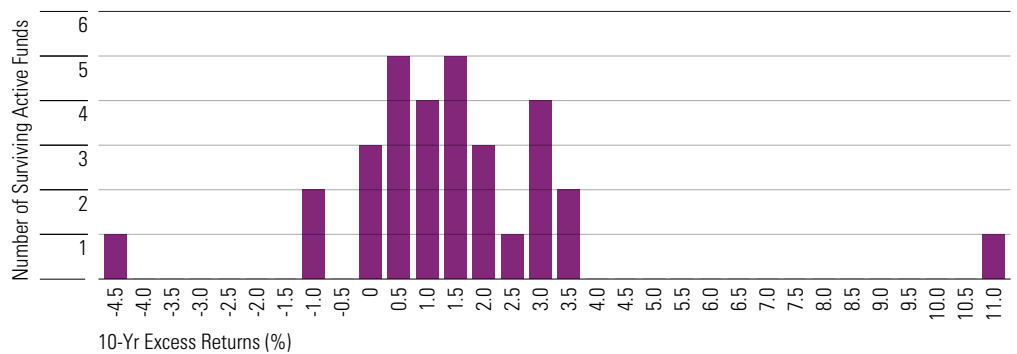
Performance by Fee Quintile

(Trailing 10 Years)

20th Percentile	11	54.5	4	50.0	5.8	4.4	5.2	5.0	45.5
40th Percentile	10	60.0	-	-	6.4	5.6	6.2	5.6	60.0
60th Percentile	10	80.0	2	100.0	7.2	4.6	6.5	5.0	50.0
80th Percentile	10	50.0	2	100.0	5.7	3.9	5.6	4.7	40.0
100th Percentile	11	54.5	2	50.0	5.9	5.3	5.9	4.9	45.5

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 38 Distribution of 10-Year Annualized Excess Returns for Surviving Active Global Real Estate Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2020.

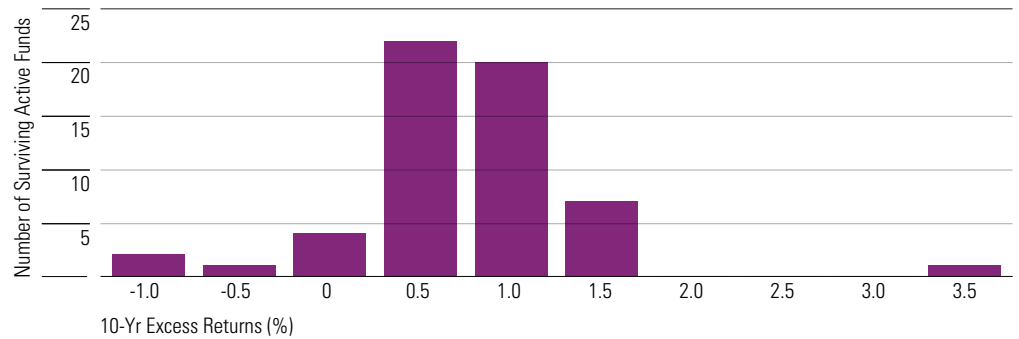
Fixed Income

- ▶ Active bond funds' showing in the first half of 2020 was relatively poor. From January through June, 40% of active bond funds in the intermediate core, corporate, and high-yield bond categories both lived and beat their average passive counterpart. Many bond funds were caught offside in a period that punished credit risk and rewarded interest-rate risk, as credit spreads widened and rates fell.
- ▶ But the COVID-crisis rebound in credit markets was favorable for active bond funds, which tend to take more credit risk than their indexed peers. The one-year success rate for active bond funds across the three categories we examined jumped to 53.5%—nearly 14 percentage points higher than what these funds registered through the first six months of 2020.
- ▶ Success rates in our new 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 39 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 (%)	
Trailing Total Return									
1-Year	136	89.0	31	90.3	8.0	7.7	7.5	7.5	53.7
3-Year	130	67.7	28	89.3	5.4	5.4	5.0	5.2	38.5
5-Year	139	52.5	30	73.3	4.6	4.4	4.2	4.2	34.5
10-Year	179	31.8	22	63.6	4.1	3.8	3.7	3.4	27.9
15-Year	226	22.1	17	47.1	4.6	4.5	4.4	4.2	15.9
20-Year	227	15.0	14	35.7	4.9	4.7	4.7	4.6	9.7
Performance by Fee Quintile									
(Trailing 10 Years)									
20th Percentile	38	47.4	5	100.0	4.2	3.8	4.0	3.9	47.4
40th Percentile	34	47.1	4	50.0	3.8	3.7	3.7	3.6	38.2
60th Percentile	35	37.1	4	75.0	4.0	3.5	3.9	3.5	31.4
80th Percentile	36	11.1	4	50.0	3.7	3.6	3.3	3.5	11.1
100th Percentile	36	16.7	5	40.0	4.0	3.3	3.6	3.3	11.1

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 40 Distribution of 10-Year Annualized Excess Returns for Surviving Active Intermediate Core Bond Funds

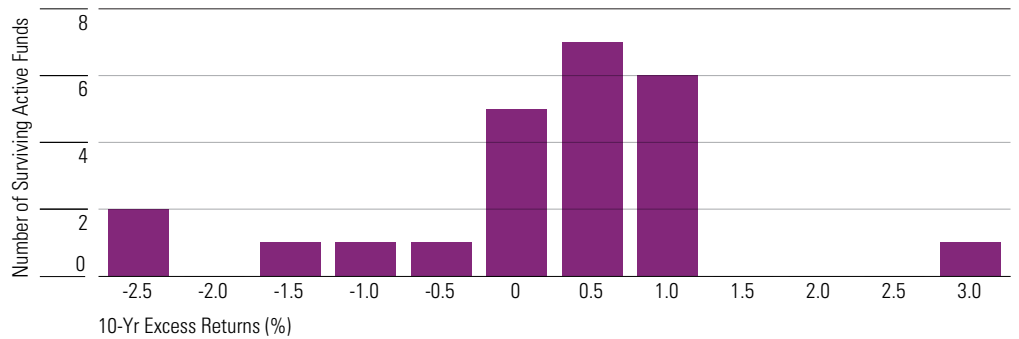
Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 41 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 (%)	
Trailing Total Return									
1-Year	62	93.5	18	100.0	9.2	10.3	10.0	9.9	48.4
3-Year	62	82.3	24	62.5	7.4	7.4	6.8	7.0	35.5
5-Year	55	78.2	26	42.3	7.3	6.7	6.7	6.3	49.1
10-Year	37	73.0	8	62.5	6.1	5.7	5.7	5.6	40.5
Performance by Fee Quintile									
(Trailing 10 Years)									
20th Percentile	8	62.5	2	50.0	6.2	6.0	6.2	6.5	37.5
40th Percentile	7	100.0	3	66.7	5.3	6.0	5.2	5.8	42.9
60th Percentile	7	71.4	-	-	6.0	-	5.8	-	57.1
80th Percentile	7	57.1	3	66.7	6.8	4.8	6.0	5.6	42.9
100th Percentile	8	75.0	-	-	5.5	-	5.3	-	25.0

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 42 Distribution of 10-Year Annualized Excess Returns for Surviving Active Corporate-Bond Funds



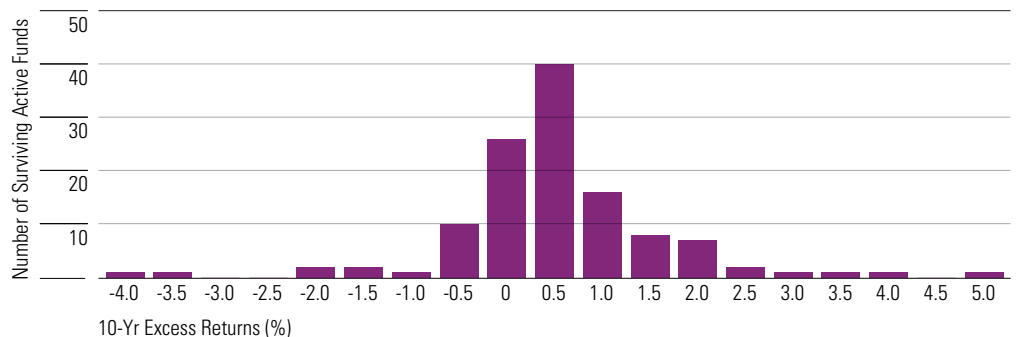
Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 43 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 (%)	
Trailing Total Return									
1-Year	239	92.9	40	92.5	5.6	4.8	5.4	5.2	54.8
3-Year	247	81.0	27	85.2	5.3	5.2	5.0	5.0	46.2
5-Year	234	72.6	17	58.8	7.3	7.0	7.1	6.4	59.0
10-Year	182	65.9	3	100.0	5.9	5.6	5.8	5.7	42.3
Performance by Fee Quintile (Trailing 10 Years)									
20th Percentile	37	78.4	1	100.0	6.2	5.4	6.0	5.4	59.5
40th Percentile	36	72.2	2	100.0	5.8	5.6	5.6	5.5	36.1
60th Percentile	36	58.3	—	—	5.9	—	5.7	—	47.2
80th Percentile	36	52.8	—	—	5.4	—	5.6	—	27.8
100th Percentile	37	67.6	—	—	6.1	—	6.5	—	40.5

Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Exhibit 44 Distribution of 10-Year Annualized Excess Returns for Surviving Active High-Yield Bond Funds



Source: Morningstar. Data and calculations as of Dec. 31, 2020.

Appendix A

Summary of Updated Results for the Periods Ended Jun. 30, 2020, and Dec. 31, 2019

Exhibit 45 Summary Results for the Period Ended June 30, 2020

Category	Active Funds' Success Rates by Category (%)								10-Year	10-Year
	Year-to-Date	1-Year	3-Year	5-Year	10-Year	15-Year	20-Year	(Lowest Cost)	(Highest Cost)	
U.S. Large Blend	34.9	36.1	24.7	13.7	9.5	14.0	13.9	14.6	6.3	
U.S. Large Value	49.1	42.1	26.1	18.2	11.5	10.8	16.5	25.8	6.1	
U.S. Large Growth	47.8	38.9	33.3	23.9	10.1	9.9	—	18.7	3.4	
U.S. Mid Blend	36.4	34.7	27.9	15.0	15.7	8.0	15.7	37.0	3.7	
U.S. Mid Value	73.9	72.7	46.9	32.5	23.2	43.3	—	28.0	17.4	
U.S. Mid Growth	65.6	63.2	62.4	55.8	39.9	33.9	—	46.8	29.8	
U.S. Small Blend	30.2	25.6	23.5	20.4	15.5	8.9	34.3	29.7	8.3	
U.S. Small Value	53.0	40.0	26.4	26.3	32.7	31.8	—	38.1	19.0	
U.S. Small Growth	63.8	58.0	53.6	51.4	43.6	27.4	—	50.0	34.1	
Foreign Large Blend	51.5	50.8	28.7	21.2	20.4	14.3	15.8	46.2	18.4	
Foreign Large Value	68.0	66.3	28.3	26.6	31.6	—	—	35.0	30.0	
Foreign Small-Mid Blend	28.1	21.9	9.4	7.1	22.2	—	—	25.0	0.0	
World Large Stock	59.7	50.4	39.1	29.3	26.3	29.8	—	35.7	19.0	
Diversified Emerging Markets	65.6	65.7	45.6	48.9	44.7	35.4	—	54.2	21.7	
Europe Stock	72.2	68.4	46.2	42.9	35.3	31.4	—	42.9	0.0	
U.S. Real Estate	80.3	76.0	75.3	66.7	40.2	30.5	23.1	47.1	23.5	
Global Real Estate	83.1	76.3	59.4	47.5	53.2	—	—	60.0	40.0	
Intermediate Core Bond	39.8	48.3	31.3	28.2	22.9	14.5	8.9	41.7	8.3	
Corporate Bond	30.2	36.1	14.0	43.6	40.0	—	—	42.9	14.3	
High-Yield Bond	42.4	47.9	43.7	44.4	44.5	—	—	62.9	42.9	

Source: Morningstar. Calculations as of June 30, 2020.

Exhibit 46 Summary Results for the Period Ended Dec. 31, 2019

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	34.5	24.4	11.4	8.1	16.6	14.3	16.7	2.2
U.S. Large Value	34.3	24.9	15.6	7.1	14.9	17.6	23.1	3.1
U.S. Large Growth	43.6	34.0	28.1	6.1	11.6	—	9.8	2.2
U.S. Mid Blend	57.5	29.7	12.8	11.9	6.3	12.7	33.3	3.7
U.S. Mid Value	58.8	29.4	26.1	12.6	30.9	—	12.5	0.0
U.S. Mid Growth	72.0	66.1	52.8	33.7	28.8	—	40.8	20.4
U.S. Small Blend	46.2	26.8	22.2	19.9	16.6	35.5	47.4	16.2
U.S. Small Value	46.6	33.9	31.6	33.3	26.4	—	50.0	15.8
U.S. Small Growth	74.8	57.1	47.9	31.3	22.6	—	40.0	20.0
Foreign Large Blend	58.4	34.8	33.1	33.7	28.9	33.1	44.7	28.9
Foreign Large Value	29.6	24.2	27.2	36.6	—	—	42.1	26.3
Foreign Small-Mid Blend	54.8	31.3	26.9	72.2	—	—	75.0	100.0
World Large Stock	53.7	34.0	29.7	30.1	29.2	—	37.8	16.2
Diversified Emerging Markets	67.5	49.1	46.2	50.9	—	—	68.2	31.8
Europe Stock	52.6	30.4	19.0	46.4	33.3	—	83.3	33.3
U.S. Real Estate	70.0	33.8	38.2	28.0	32.4	31.9	46.7	13.3
Global Real Estate	66.0	46.8	32.7	40.5	—	—	33.3	22.2
Intermediate Core Bond	36.5	38.7	39.7	27.5	16.2	11.7	48.6	14.7
Corporate Bond	25.5	60.4	60.0	28.6	—	—	33.3	33.3
High-Yield Bond	59.6	56.3	48.6	55.1	—	—	67.9	46.4

Source: Morningstar. Calculations as of Dec. 31, 2019. *This data appears as it was originally presented for the legacy intermediate-term bond Morningstar Category.

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 than 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 the one of the best predictors of future fund performance. We have sliced our universe into fee quintiles to highlight this relationship. ■■