

The original research was  
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Rui Yao<sup>1</sup>

Ph.D., Professor  
Director of Graduate Studies -  
Personal Financial Planning  
Division of Applied Social  
Sciences  
[yaor@missouri.edu](mailto:yaor@missouri.edu)

## Retirement Plan Performance Measures

The data consisted of four categories of retirement plans of various sizes based on their market values, \$1 million to \$10 million, \$10-100 million, \$100-500 million, and over \$500 million. The final sample size was 5,000 for the fund-level analysis and 4,999 for the plan-level analysis. This sample is representative of its underlying plan population, which are audited plans with at least one million dollars in plan assets and have at least three mutual funds that are not a money market fund.

- Table 1 reports the number of the total population and the sample of each fund size category in 2021.
- Table 2 reports the mean ratio of funds in plans that outperformed their benchmark.
- Table 3 reports the percentage of plans in each size category that outperformed their benchmark.

This report employs a fund-level approach and a plan-level approach to evaluate the plan's performance. The performance measures used in the analysis at both the fund level and the plan level included expected return, standard deviation, Sharpe ratio, downside risk, and Sortino ratio.

## Summary of Results

### Plan Performance at the Fund Level

Table 2 reports the mean (average) ratio of funds in plans that outperformed their benchmark.

The average of funds in plans that outperformed their benchmark was calculated by dividing the number of outperforming funds by the total number of funds in the lineup for each plan and taking an average of these ratios for all plans and for plans in each size category.

Evaluated by the expected return, the overall average percent of funds in a plan that outperformed its benchmark was 48.66%. The percentage was generally higher for small plans. Plans with a market value of \$1-10 million performed better than other plans with an average of outperforming funds of 49.52%. Only 46.06% of plans with a market value of \$500 million or higher outperformed their corresponding benchmark at the fund level, the lowest of all four categories.

<sup>1</sup> Rui Yao, PhD, CFP®, Professor, Applied Social Sciences, University of Missouri, [yaor@missouri.edu](mailto:yaor@missouri.edu).  
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### Plan Performance at the Plan Level

Table 3 reports the percentage of plans that outperformed their corresponding benchmark plan in 2021 at the plan level.

To calculate at the plan level, an equal weight is assigned to each fund offered in its retirement plan. The benchmark for each retirement plan consists of the benchmark of each fund in that plan. Funds in each benchmark plan received their weight in the same manner. Performance measures are then calculated for both the retirement plan portfolio and its benchmark plan portfolio.

On average, the percentage of plans that achieved a higher expected return than their benchmark was 38.87%. Generally, the percentage of plans that outperformed their benchmark plan as measured by expected return was higher for plans with a smaller market value. 45.03% of plans with a market value of \$1-10 million outperformed their benchmark, the highest among all categories. Only an average of 29.51% of the largest plans with a market value of \$500 or more outperformed their benchmark, the lowest among all size categories.

## Table 1

*Number of Defined Contribution Plans in 2021*

Plan Size	2021
<b>\$1m-\$10m</b>	
Population	39,780
Sample	1,700
<b>\$10m-\$100m</b>	
Population	65,283
Sample	2,601
<b>\$100m-\$500m</b>	
Population	12,431
Sample	516
<b>\$500m+</b>	
Population	3,648
Sample	183
<b>Total</b>	
Population	121,142
Sample	5,000

Note. Data supplied by BrightScope. Stratified random sampling was applied to the population for a total sample size of 5,000 for the fund-level. After removing plans with missing values, the final sample size was 4,999 for the plan-level.

## Table 2

*Mean Ratio of Funds in Plans that Outperformed Their Benchmark*

Plan Size	2021
	<b>Panel A: Higher Expected Returns</b>
<b>Overall</b>	48.66
\$1-10m	49.52
\$10-100m	48.50
\$100-500m	47.58
\$500m+	46.06
	<b>Panel B: Lower Risk (Standard Deviation)</b>
<b>Overall</b>	26.01
\$1-10m	25.48
\$10-100m	25.99
\$100-500m	27.58
\$500m+	26.84
	<b>Panel C: Higher Sharpe Ratio</b>
<b>Overall</b>	49.48
\$1-10m	49.82
\$10-100m	49.30
\$100-500m	50.28
\$500m+	46.72
	<b>Panel D: Lower Downside Risk</b>
<b>Overall</b>	32.94
\$1-10m	32.35
\$10-100m	33.10
\$100-500m	33.55
\$500m+	34.56
	<b>Panel E: Higher Sortino Ratio</b>
<b>Overall</b>	53.89
\$1-10m	54.52
\$10-100m	53.67
\$100-500m	54.24
\$500m+	50.37

Note. n=5,000, numbers in percentages.

## Table 3

*Percentages of Plans that Outperformed Their Benchmark*

Plan Size	2021
	<b>Panel A: Higher Expected Returns</b>
<b>Overall</b>	38.87
\$1-10m	45.03
\$10-100m	37.06
\$100-500m	31.01
\$500m+	29.51
	<b>Panel B: Lower Risk (Standard Deviation)</b>
<b>Overall</b>	13.58
\$1-10m	11.07
\$10-100m	13.42
\$100-500m	18.22
\$500m+	26.23
	<b>Panel C: Higher Sharpe Ratio</b>
<b>Overall</b>	16.12
\$1-10m	19.54
\$10-100m	14.73
\$100-500m	12.21
\$500m+	15.30
	<b>Panel D: Lower Downside Risk</b>
<b>Overall</b>	43.07
\$1-10m	42.73
\$10-100m	41.95
\$100-500m	47.09
\$500m+	50.82
	<b>Panel E: Higher Sortino Ratio</b>
<b>Overall</b>	40.91
\$1-10m	40.97
\$10-100m	40.52
\$100-500m	41.47
\$500m+	44.26

Note. n=4,999, numbers in percentages.