S&P Target Date Scorecard

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SUMMARY

- The S&P Target Date® Scorecard provides performance comparisons, equal- and asset-weighted category averages, and analytics covering the target date fund (TDF) universe.
- Past performance of the "Through" glide path category, as represented by the S&P Target Date Through benchmarks, is significantly different from that of the "To" category, as represented by the S&P Target Date To benchmarks. This is because of generally higher equity allocations within the Through TDFs. Report 4 shows the difference in three-year annualized total returns between the To and Through benchmarks by vintage. The maximum difference of 0.97% occurred in the 2015 vintage, while the minimum was in 2060+.
- As has been the case in past scorecards, asset-weighted average TDF returns continued to be higher than equal-weighted returns over one-, three-, and five-year time horizons. This indicates that some larger TDFs earned relatively higher returns than some of the smaller counterparts. Among other factors (such as differences in net expenses), this may reflect greater equity allocations in larger TDFs during the U.S. equity market rally since early 2009.
- The S&P Target Date Index Series is a representative benchmark for TDFs. The series is used extensively throughout the report and distinguishes itself from peer group benchmarks because it is investable, comprises consensus-derived asset allocation weights, and its composition is known in advance of evaluation periods.
- The S&P Target Date To and Through Indices offer stakeholders style-specific measures of the two prominent approaches to glide path management within the TDF universe. These indices may be appropriate for plans that seek a tighter-fitting TDF benchmark than one covering the entire industry.
- Underlying data is obtained from the Morningstar® U.S. Open-End Fund Database. The S&P Target Date Scorecard is published semiannually.

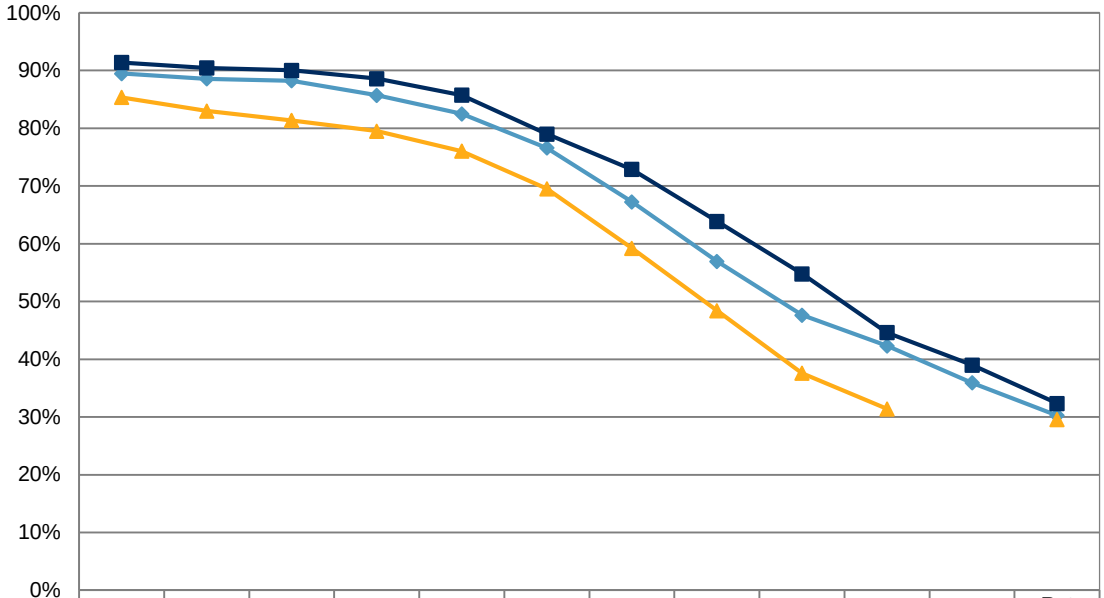
A UNIQUE SCORECARD FOR THE TARGET DATE UNIVERSE

The S&P Target Date Scorecard presents the performance of TDFs as compared to appropriate benchmark indices. We consider all target date asset allocation policies to be active decisions, so we include funds that use passive underlying investments as well as active underlying investments. The scorecard covers target dates from retirement income to 2060 and beyond, and it has the following unique features.

- **A Representative Target Date Benchmark:** The S&P Target Date Index[1] is the only consensus-driven target date benchmark offered by an independent index provider. Its asset class exposure and glide path are functions of market observations acquired from an annual survey of target date managers. The index currently includes target dates from retirement income through 2060+. The S&P Target Date To Retirement Income and the S&P Target Date Through Retirement Income series were launched in January 2015, and performance is incorporated as accumulated history becomes available.
- **Apples-to-Apples Comparison:** Target date fund returns are sometimes compared to popular asset class benchmarks such as the S&P 500® or Bloomberg Barclays U.S. Aggregate Bond Index®. The S&P Target Date Scorecard avoids this pitfall by measuring a fund's returns against the returns of the benchmark that is most appropriate for each target date category.
- **Asset Allocation Risk Revealed:** Sometimes custom, multi-asset class benchmarks are used for comparison purposes. However, these benchmarks do not measure asset allocation risk, as they are typically set with asset class exposure selected by fund managers. They also may lack transparency with respect to the method behind their calculation and may not be adjusted for changes in asset allocation policy over time. The report avoids these problems by referencing our consensus-driven target date benchmark that provides a representative proxy of asset allocation risk for each target date vintage.
- **Asset-Weighted Returns:** Average returns for a fund group are often calculated using only equal weighting, which results in the returns of a USD 10 billion fund affecting the average in the same manner as the returns of a USD 10 million fund. An accurate representation of how market participants fared in a particular period can be better ascertained by calculating weighted average returns, in which each fund's return is weighted by net assets. The S&P Target Date Scorecard shows both equal- and asset-weighted averages. Additionally, we now use all share classes to calculate average TDF returns and performance quartiles.
- **Data Cleaning:** Appropriate peer groups are built from underlying databases so meaningful benchmark comparisons may be performed. TDFs with vintages of 2060 or beyond are compared with the S&P Target Date 2060+ Index. TDFs with vintages that have already passed, such as 2005, are compared with the S&P Target Date Retirement Income Index. Average TDF returns, both equal-weighted and asset-weighted, are calculated using all share classes within each fund family in order to represent the aggregate experience of TDF shareholders. The S&P Target Date Scorecard offers the only comprehensive, periodic, and publicly available source of such data. Reports are available at www.spdji.com.

[1] It is not possible to invest directly in an index. Indices are statistical composites and their returns do not include payment of any sales charges or fees an investor would pay to purchase the securities they represent. Such costs would lower performance.

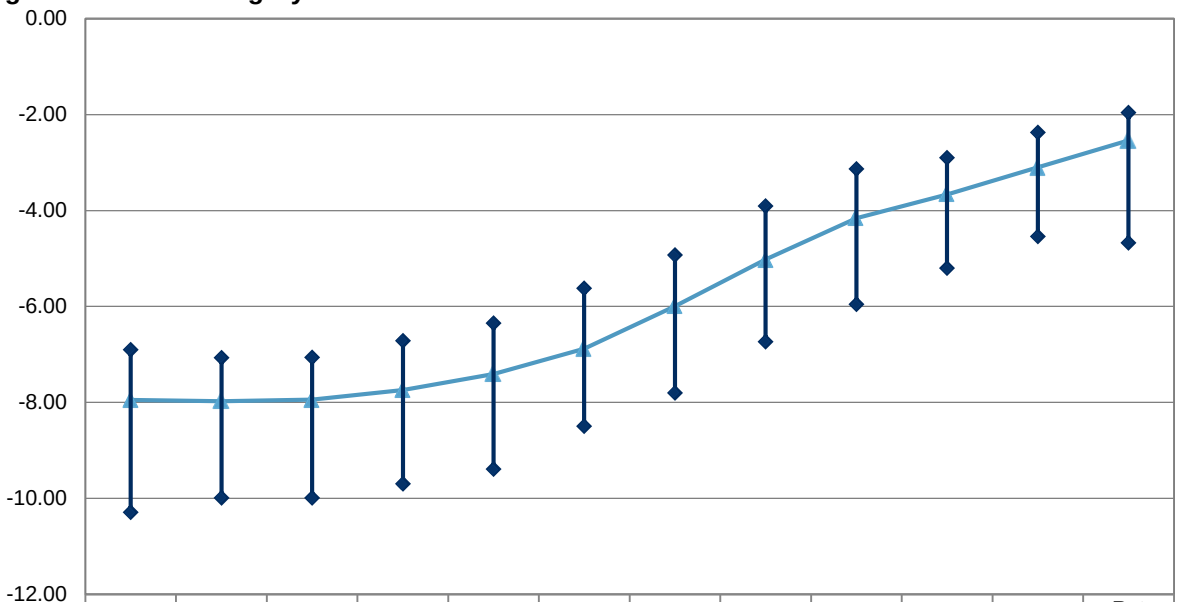
Report 1: S&P Target Date Benchmark Glide Path – Total Equity



	2060+	2055	2050	2045	2040	2035	2030	2025	2020	2015	2010	Ret Income
Target Date	89.5%	88.6%	88.3%	85.7%	82.5%	76.6%	67.3%	56.9%	47.6%	42.3%	35.9%	30.3%
Target Date Through	91.4%	90.5%	90.0%	88.6%	85.7%	79.0%	72.9%	63.9%	54.8%	44.6%	39.0%	32.4%
Target Date To	85.3%	83.0%	81.4%	79.5%	76.0%	69.5%	59.2%	48.4%	37.6%	31.4%		29.6%

Source: S&P Dow Jones Indices LLC, Morningstar Direct. Data as of Dec. 31, 2018. Chart is provided for illustrative purposes. Past performance is no guarantee of future results. The S&P Target Date To 2010 was discontinued effective June 5, 2016.

Report 2: Target Date Fund Category Performance – One Year



	2060+	2055	2050	2045	2040	2035	2030	2025	2020	2015	2010	Ret Income
90th Percentile	-6.90	-7.07	-7.06	-6.71	-6.35	-5.62	-4.93	-3.91	-3.13	-2.90	-2.37	-1.96
10th Percentile	-10.29	-9.99	-9.99	-9.70	-9.39	-8.50	-7.80	-6.73	-5.96	-5.20	-4.54	-4.67
Index	-7.95	-7.97	-7.94	-7.74	-7.41	-6.88	-5.99	-5.02	-4.16	-3.67	-3.10	-2.54

Source: S&P Dow Jones Indices LLC, Morningstar Direct. Data as of Dec. 31, 2018. Chart is provided for illustrative purposes. Past performance is no guarantee of future results.

Report 3: Average Target Date Fund Performance

CATEGORY	ONE-YEAR (%)	THREE-YEAR ANNUALIZED (%)	FIVE-YEAR ANNUALIZED (%)
Ret Income TDFs (equal weighted)	-1.65	3.94	2.93
Ret Income TDFs (asset weighted)	-3.34	3.48	2.78
S&P Target Date Ret Income	-2.54	3.57	3.06
S&P Target Date To Ret Income	-2.50	2.92	0.00
S&P Target Date Through Ret Income	-2.81	3.64	0.00
2010 TDFs (ew)	-3.40	4.08	3.18
2010 TDFs (aw)	-5.36	7.40	5.55
S&P Target Date 2010	-3.10	4.08	3.40
S&P Target Date To 2010	-	-	-
S&P Target Date Through 2010	-3.41	4.29	3.58
2015 TDFs (ew)	-4.05	4.40	3.36
2015 TDFs (aw)	-3.70	4.82	3.79
S&P Target Date 2015	-3.67	4.57	3.79
S&P Target Date To 2015	-2.73	4.01	3.34
S&P Target Date Through 2015	-3.90	4.98	4.05
2020 TDFs (ew)	-4.60	4.40	3.39
2020 TDFs (aw)	-4.41	4.92	3.87
S&P Target Date 2020	-4.16	5.05	4.10
S&P Target Date To 2020	-3.22	4.65	3.72
S&P Target Date Through 2020	-4.90	5.35	4.28
2025 TDFs (ew)	-5.38	4.97	3.75
2025 TDFs (aw)	-5.08	5.41	4.25
S&P Target Date 2025	-5.02	5.46	4.31
S&P Target Date To 2025	-4.27	5.03	3.94
S&P Target Date Through 2025	-5.72	5.76	4.57
2030 TDFs (ew)	-6.43	5.37	4.00
2030 TDFs (aw)	-6.03	5.87	4.51
S&P Target Date 2030	-5.99	5.77	4.50
S&P Target Date To 2030	-5.30	5.40	4.16
S&P Target Date Through 2030	-6.52	6.17	4.81

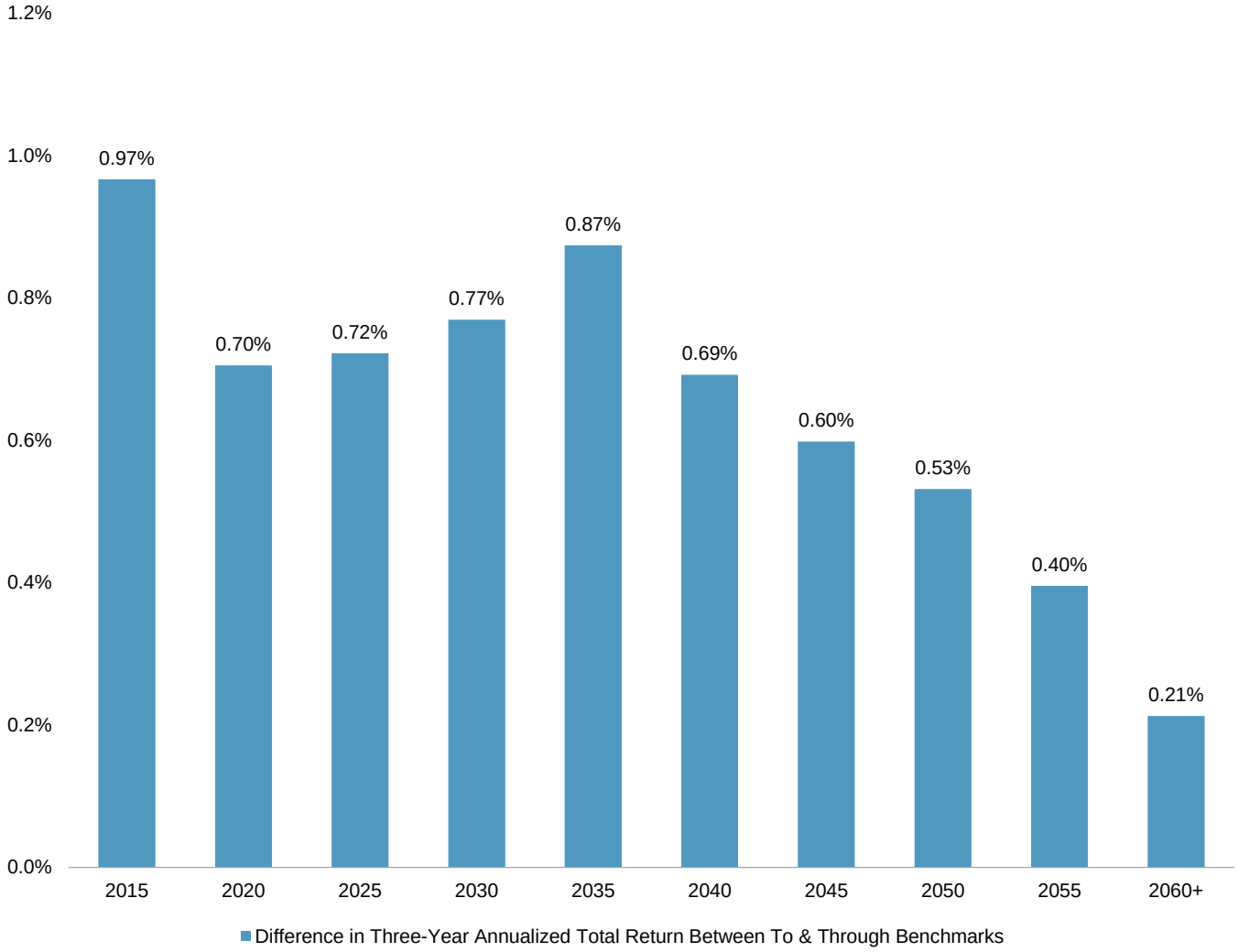
Source: S&P Dow Jones Indices LLC, Morningstar Direct. Data as of Dec. 31, 2018. “ew” indicates equal weighted. “aw” represents asset weighted. Table is provided for illustrative purposes. Past performance is no guarantee of future results. See Glossary for more information.

Report 3: Average Target Date Fund Performance (cont.)

CATEGORY	ONE-YEAR (%)	THREE-YEAR ANNUALIZED (%)	FIVE-YEAR ANNUALIZED (%)
2035 TDFs (ew)	-7.19	5.76	4.22
2035 TDFs (aw)	-6.91	6.24	4.79
S&P Target Date 2035	-6.88	6.08	4.69
S&P Target Date To 2035	-6.25	5.62	4.24
S&P Target Date Through 2035	-7.07	6.50	5.02
2040 TDFs (ew)	-7.93	5.87	4.30
2040 TDFs (aw)	-7.53	6.33	4.78
S&P Target Date 2040	-7.41	6.33	4.82
S&P Target Date To 2040	-6.95	6.01	4.46
S&P Target Date Through 2040	-7.63	6.71	5.12
2045 TDFs (ew)	-8.23	6.04	4.39
2045 TDFs (aw)	-7.70	6.43	4.89
S&P Target Date 2045	-7.74	6.51	4.91
S&P Target Date To 2045	-7.30	6.22	4.56
S&P Target Date Through 2045	-7.94	6.82	5.16
2050 TDFs (ew)	-1.62	8.64	5.94
2050 TDFs (aw)	-7.78	6.44	4.86
S&P Target Date 2050	-7.94	6.68	5.01
S&P Target Date To 2050	-7.54	6.41	4.64
S&P Target Date Through 2050	-8.01	6.94	5.19
2055 TDFs (ew)	-8.47	6.13	4.46
2055 TDFs (aw)	-7.67	6.58	5.02
S&P Target Date 2055	-7.97	6.82	5.07
S&P Target Date To 2055	-7.64	6.55	4.73
S&P Target Date Through 2055	-8.10	6.95	5.16
2060+ TDFs (ew)	-8.58	6.13	4.60
2060+ TDFs (aw)	-7.45	6.59	5.04
S&P Target Date 2060+	-7.95	6.95	5.12
S&P Target Date To 2060+	-7.73	6.76	4.85
S&P Target Date Through 2060+	-8.11	6.97	5.18

Source: S&P Dow Jones Indices LLC, Morningstar Direct. Data as of Dec. 31, 2018. “ew” indicates equal weighted. “aw” represents asset weighted. Table is provided for illustrative purposes. Past performance is no guarantee of future results. See Glossary for more information.

Report 4: Difference in Three-Year Total Return Between To and Through Indices by Vintage



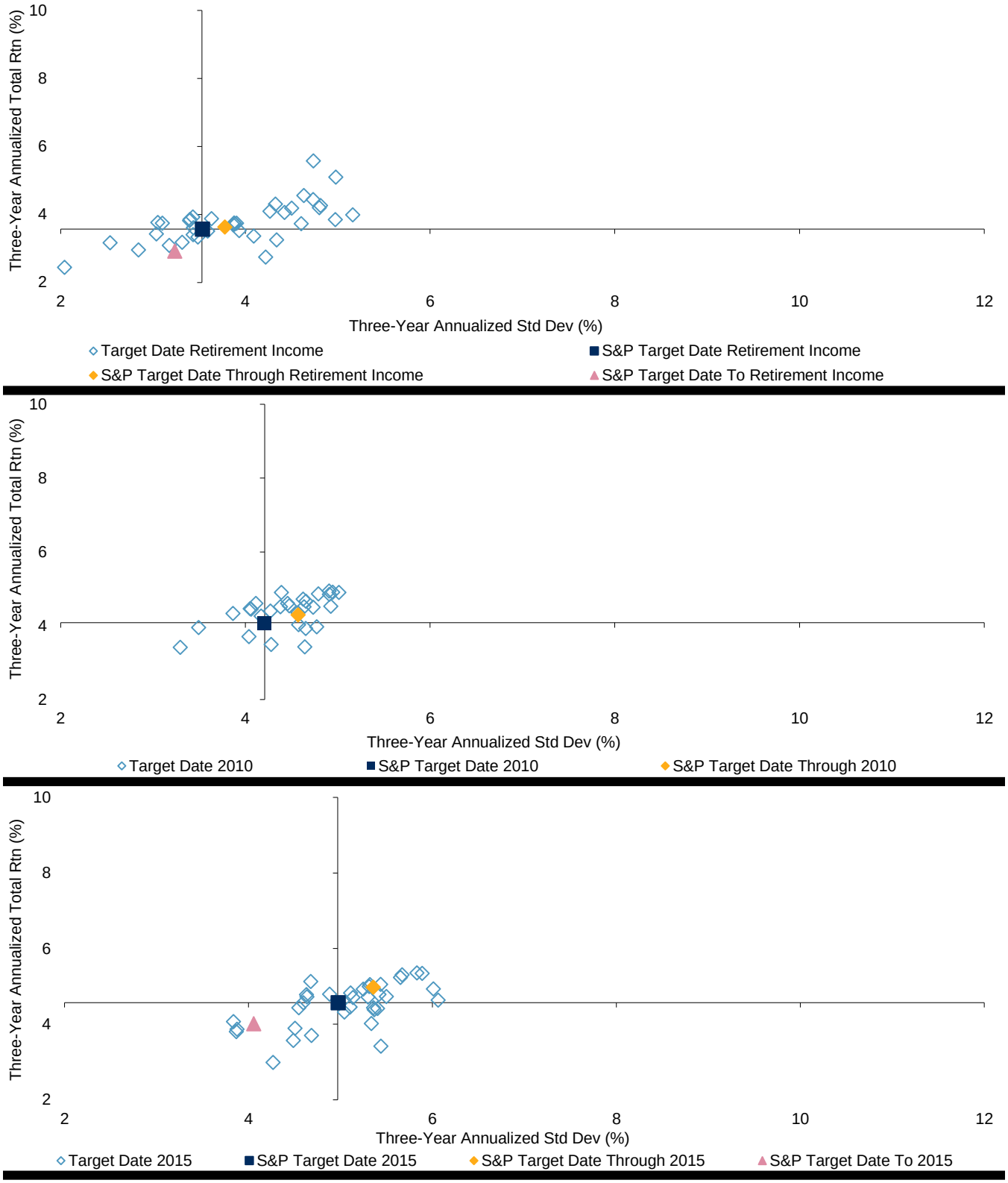
Source: S&P Dow Jones Indices LLC, Morningstar Direct. Data as of Dec. 31, 2018. Chart is provided for illustrative purposes. Past performance is no guarantee of future results.

Report 5: Quartile Breakpoints of Target Date Funds

FUND CATEGORY	THIRD QUARTILE	SECOND QUARTILE	FIRST QUARTILE
ONE-YEAR			
Ret Income	-2.67	-3.40	-4.07
Target 2010	-2.88	-3.42	-4.04
Target 2015	-3.32	-3.92	-4.69
Target 2020	-3.83	-4.51	-5.30
Target 2025	-4.56	-5.40	-6.16
Target 2030	-5.52	-6.50	-7.22
Target 2035	-6.36	-7.28	-7.96
Target 2040	-7.14	-7.98	-8.72
Target 2045	-7.50	-8.27	-9.03
Target 2050	-7.74	-8.62	-9.38
Target 2055	-7.66	-8.59	-9.39
Target 2060+	-7.82	-8.70	-9.63
THREE-YEAR			
Ret Income	3.81	3.38	2.93
Target 2010	4.55	4.26	3.81
Target 2015	4.83	4.46	4.06
Target 2020	5.03	4.52	3.92
Target 2025	5.54	5.07	4.54
Target 2030	5.94	5.37	4.83
Target 2035	6.32	5.82	5.33
Target 2040	6.43	5.83	5.30
Target 2045	6.58	6.17	5.57
Target 2050	6.56	6.08	5.47
Target 2055	6.65	6.23	5.64
Target 2060+	6.76	6.33	5.64
FIVE-YEAR			
Ret Income	3.04	2.59	1.98
Target 2010	3.66	3.32	2.87
Target 2015	3.91	3.51	3.04
Target 2020	3.91	3.44	2.84
Target 2025	4.19	3.78	3.31
Target 2030	4.45	3.98	3.44
Target 2035	4.65	4.22	3.70
Target 2040	4.72	4.30	3.70
Target 2045	4.84	4.36	3.84
Target 2050	4.84	4.33	3.85
Target 2055	4.95	4.43	3.96
Target 2060+	4.15	4.02	3.64

Source: S&P Dow Jones Indices LLC, Morningstar Direct. Data as of Dec. 31, 2018. Table is provided for illustrative purposes. Past performance is no guarantee of future results.

Report 6: Three-Year Risk/Return by Target Date



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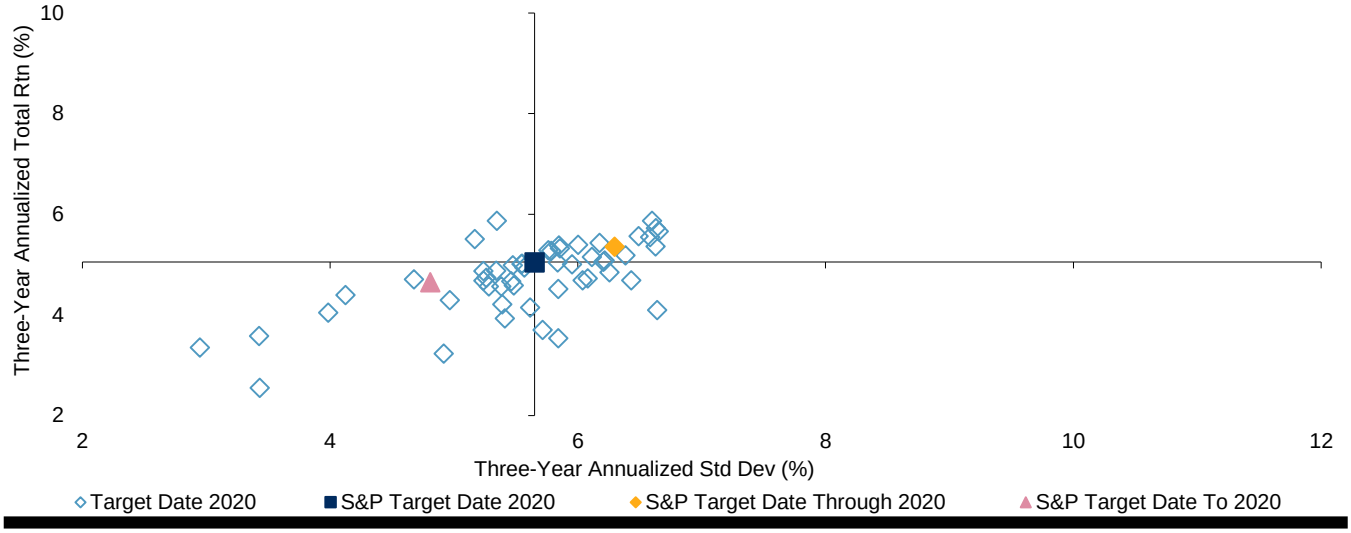
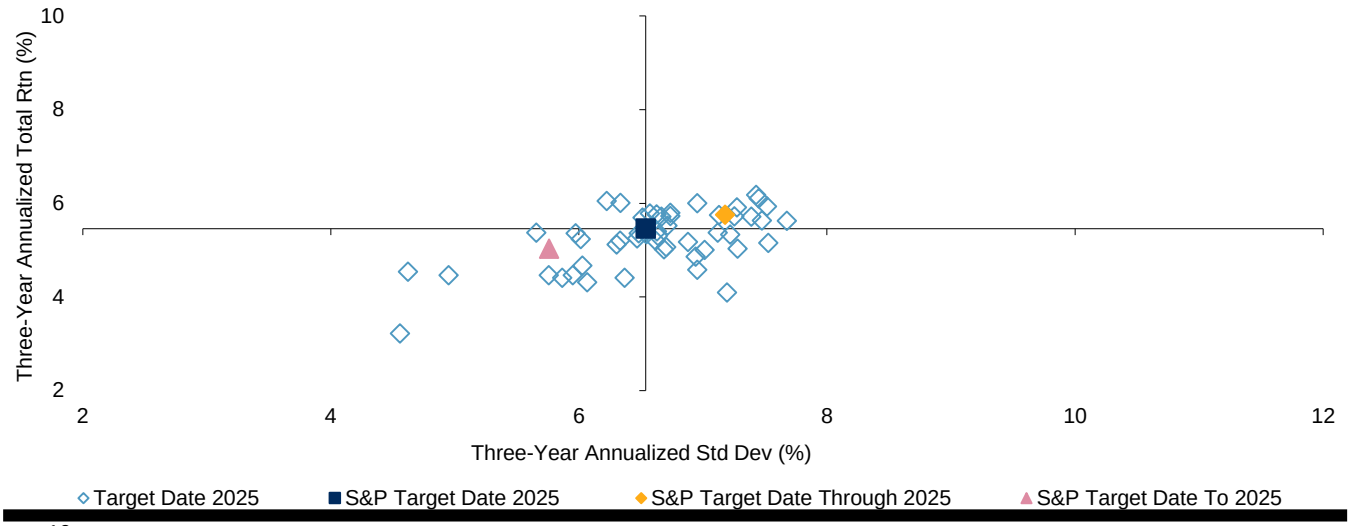
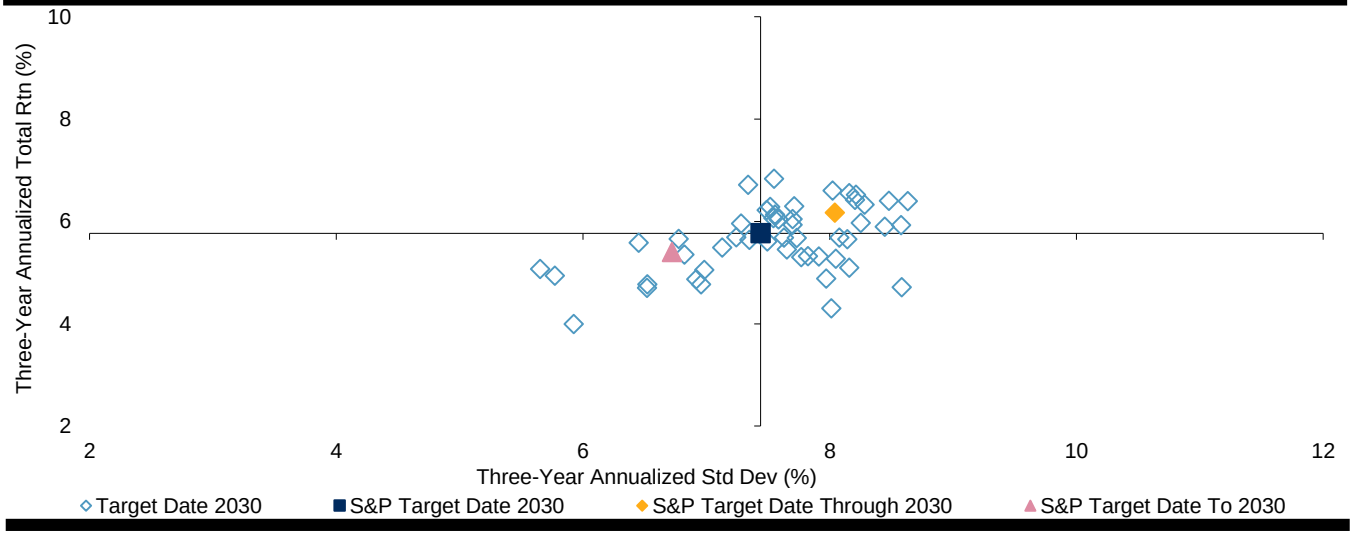
Report 6: Three-Year Risk/Return by Target Date (cont.)







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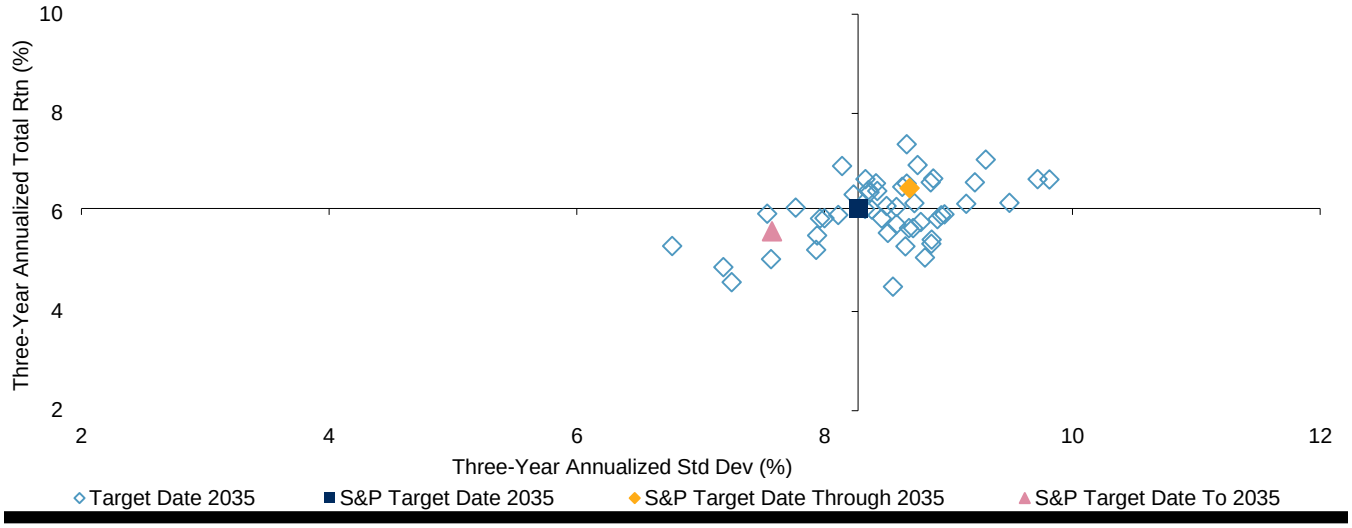

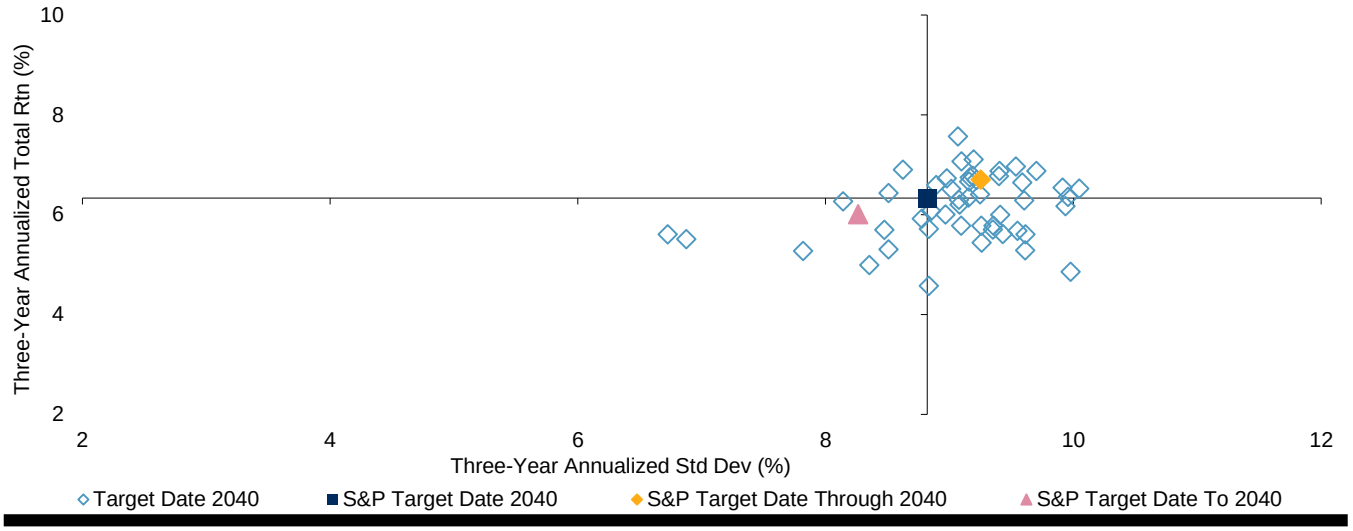

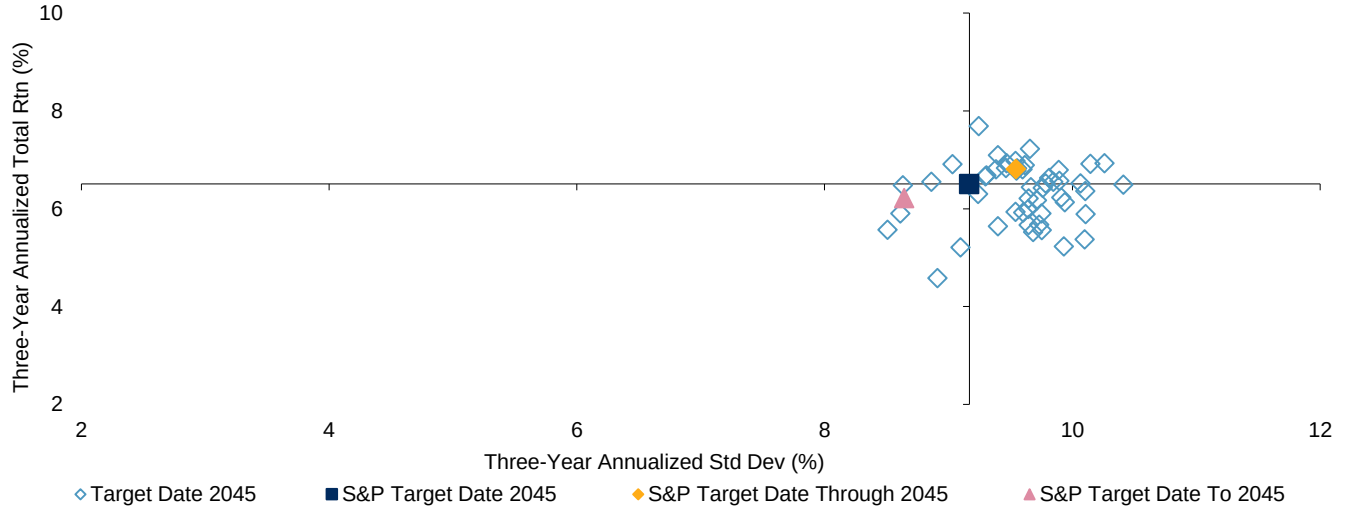

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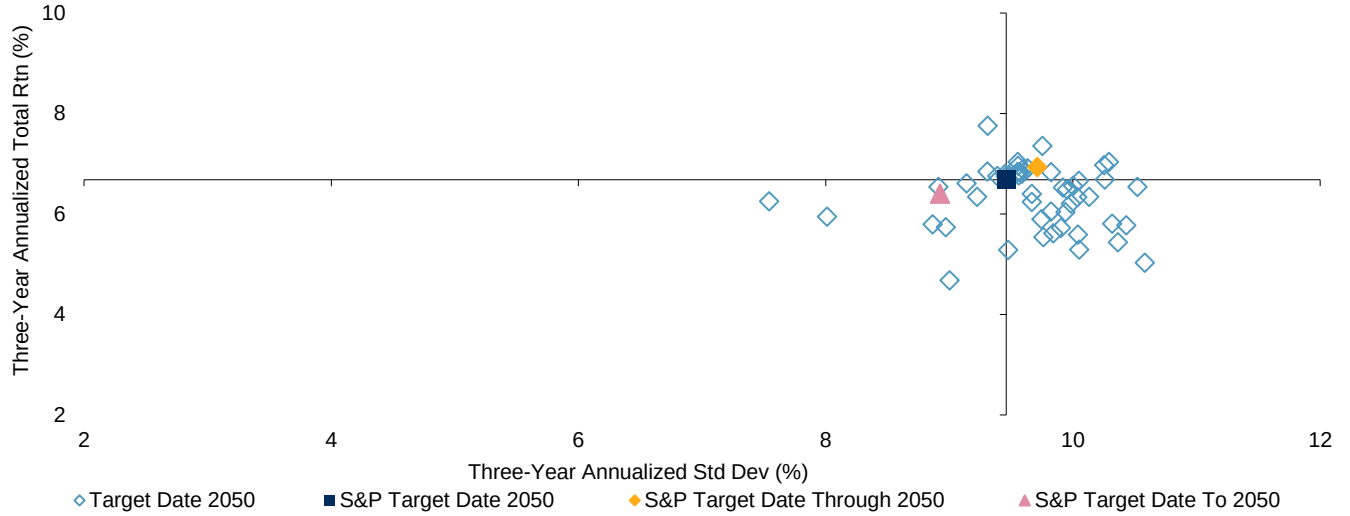

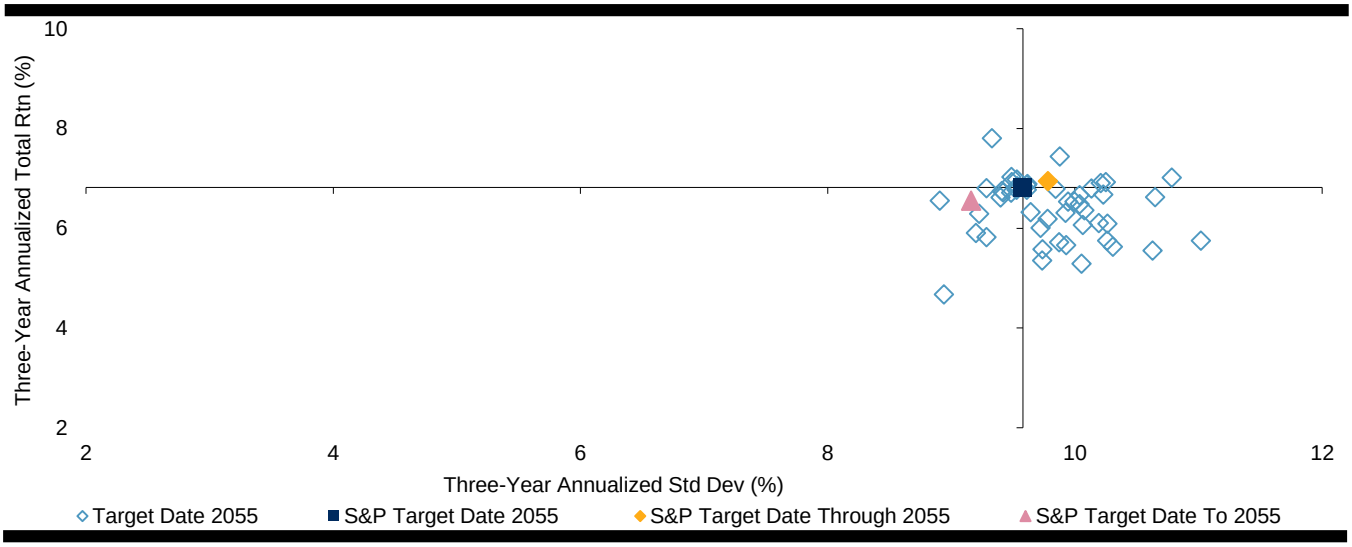

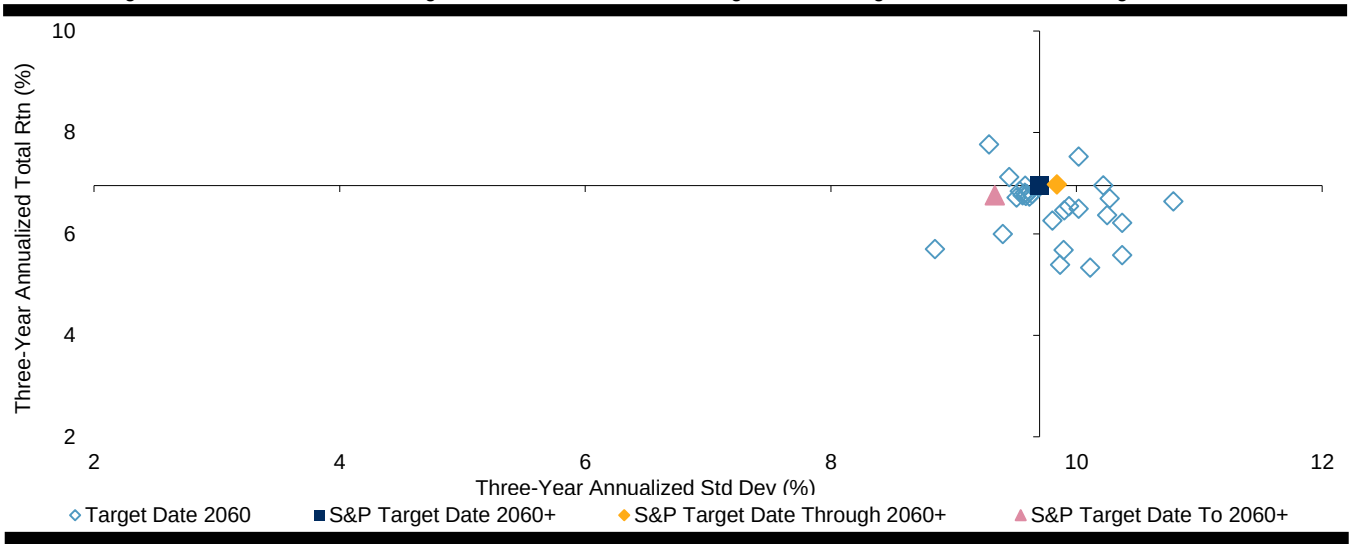

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GLOSSARY

Equal-Weighted (EW) Average TDF Performance

Equal-weighted returns for a particular style category are determined by calculating a simple average return of all active share classes in that category in a specific month. The effects of sales charges, or loads, are not included.

Asset-Weighted (AW) Average TDF Performance

Asset-weighted returns for a particular style category are determined by calculating a weighted average return of all funds in that category in a specific month, with each fund's return weighted by its total net assets. The effects of sales charges, or loads, are not included.

Quartiles Breakpoints

The pth percentile for a set of data is the value that is greater than or equal to p% of the data but less than or equal to (100 - p)% of the data. In other words, it is a value that divides the data into two parts: the lower p% of the values and the upper (100 - p)% of the values. The first quartile is the 75th percentile, meaning it is the value separating the elements of a population into the lower 75% and the upper 25%. The second quartile is the 50th percentile and the third quartile is the 25th percentile. Returns of all share classes, excluding loads, are used to calculate TDF category quartiles for specific time periods.

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