



TD Greystone Target Date Plus Funds: **2019 Annual Glide Path Update**

Overview

Consistent with the process for the TD Greystone Target Date Plus Funds (the “Funds”), on an annual basis the glide path is formally examined through the Annual Glide Path Update. This involves running the proprietary TD Asset Management Glide Path Analytics (the “GPA”) to incorporate any evolutions in available asset classes or funds, long-term asset class assumptions or demographics. The 2019 Annual Glide Path Update was conducted in November 2019 and many of the resulting changes were implemented in December 2019.

Long-Term Asset Class Assumptions

Consistent with the firm wide approach for multi-asset solutions, TD Asset Management Inc. (“TDAM”) sets its Long-Term Asset Class Assumptions using an objective building block approach for expected returns, and historical quarterly returns for standard deviations and correlations.

Our asset class assumptions are long-term in nature, 7 – 10 years. The strategic asset mix decisions rely on intermediate and long-term trends rather than attempting to time the business cycle itself. For more information on how long-term asset class assumptions are set, please reference our

Methodology paper, which is available upon request. The data in **Chart 1** is based on inputs as of September 30, 2019.

For 2019, Low-Volatility All Country World Equities (“Low-Volatility ACWI”) was added as an available asset class.

Within the GPA, the long-term asset class assumptions are used to construct the efficient frontier, which provides the optimal asset mix given a defined standard deviation. Each point along the strategic glide path is then defined by a standard deviation, which corresponds to this efficient frontier.

Chart 1: Long-Term Asset Class Assumptions for TD Greystone Target Date Plus Funds

	Expected Return ¹	Standard Deviation ²
Fixed Income		
Canadian Short Term Bonds	1.9	2.2
Canadian Real Return Bond	2.4	6.5
Canadian Fixed Income	2.2	3.7
Canadian Long Bonds	2.6	6.7
High Yield	5.3	10.8
Private Commercial Mortgages	4.3	2.9
Equities³		
Canadian Equities	6.8	15.6
Global Equities	6.2	13.3
Global Income & Growth Equities	6.2	12.4
Low-Volatility ACWI Equities	6.5	13.3
Alternatives		
Canadian Real Estate	5.4	8.1 ⁴
Global Infrastructure	6.6	7.4 ⁴

¹ No assurance that expected returns will be achieved. ² Standard deviation is calculated using respective benchmarks. From December 1998 until September 2019. ³ Unhedged returns in Canadian Dollars. ⁴ Please note that the experienced volatility was 3.4% and 4.8% for Real Estate and Infrastructure, respectively. Infrequently measured assets like Real Estate and Infrastructure exhibit serial correlation and failure to correct can understate fundamental volatility for the asset classes. For this reason, we have de-smoothed the return stream of Real Estate and Infrastructure and the results of our analysis reflect this de-smoothing approach. Source: TD Asset Management. As at Sep 30, 2019.

Canadian Socioeconomic and Demographic Assumptions

Demographic assumptions used by the GPA can be broken down into two categories: government-driven assumptions and population-driven demographic assumptions.

Government-Driven Assumptions

Government-driven assumptions are published directly from the Government of Canada or Bank of Canada and are updated each year through the annual process (**Chart 2**). All changes from 2018 to 2019 were in-line with expectations.

Chart 2: 2018 Government-Driven Assumptions

	2019	2018	YoY Change
Yearly Maximum Pensionable Earnings (YMPE)	\$57,400	\$55,900	\$1,500 (+2.7%)
Old Age Security (OAS) (Maximum Payout Amount)	\$7,362	\$7,210	\$152 (+2.1%)
Canada Pension Plan (CPP) (Maximum Payout Amount)	\$13,855	\$13,610	\$240 (+1.8%)
Inflation Target	2.0%	2.0%	-

Source: Bank of Canada, Government of Canada. As at Sep 30, 2019.

Enhancements to Canada Pension Plan (CPP)¹

TDAM monitors the Canadian landscape for material developments or changes that affect demographic and socioeconomic assumptions.

Starting January 1, 2019, enhancements to CPP were introduced with the objective to increase income replacement from 25% to 33%. Changes to CPP contributions are being gradually phased in over seven years. Members contributing to CPP in 2019 or later will be eligible for higher post-retirement benefits. **Chart 3** summarizes some key changes.

Chart 3: CPP Program Changes

	2018	2023
Total Contribution to CPP ¹	9.9%	11.9%
Maximum Pensionable Earnings	\$55,900	\$65,700
Target Income Replacement	¼ of YMPE	⅓ of YMPE

¹ Up to the first earnings ceiling (estimated to be \$69,700 in 2025). Source: Government of Canada. As at Sep 30, 2019.

In the 2019 Annual Glide Path Update, no changes directly resulting from the forthcoming CPP enhancements were incorporated.

TDAM will continue to monitor and assess the impact of these developments, particularly in how they flow through to socio-economic data such as contribution rates and retirement expenditure, to determine if and how they should be incorporated within the GPA.

Population-Driven Assumptions

Population-driven demographic assumptions are primarily derived from Statistics Canada annual surveys or the quadrennial Census of Population. Typically, population-driven assumptions have a 1-2 year lag before they are published. TDAM will adjust each assumption as needed to ensure a consistent base year for the data used in the GPA.

In 2019, there were no updates required for our assumptions for Year of Entry, Year of Retirement and Real Salary Growth. The assumption for Starting Salary at Age 25 increased by 2.7% to approximately \$46,636. The assumption for Retirement Expenditure increased by 4.3% to approximately \$61,969. The assumed contribution rate continues to follow a step pattern and ranges from 10.6% to 12.1%.

¹ Government of Canada.

Strategic Glide Path

The long-term asset class assumptions and demographic and socio-economic assumptions are inputs into the GPA, which is used to derive the Strategic Glide Path. TDAM imposes updated constraints to manage year-over-year swings between asset classes or individual funds (Chart 4).

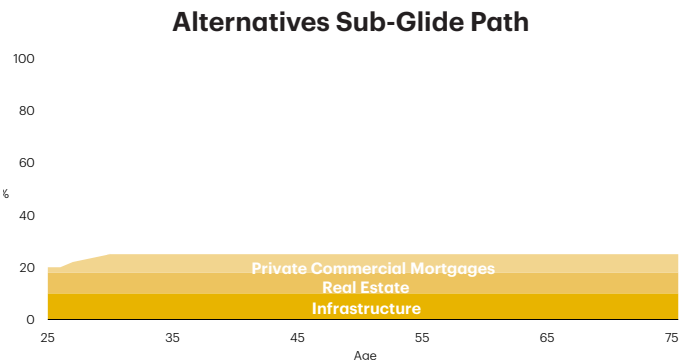
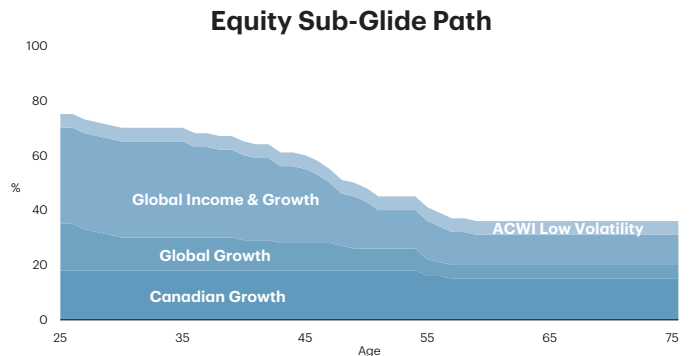
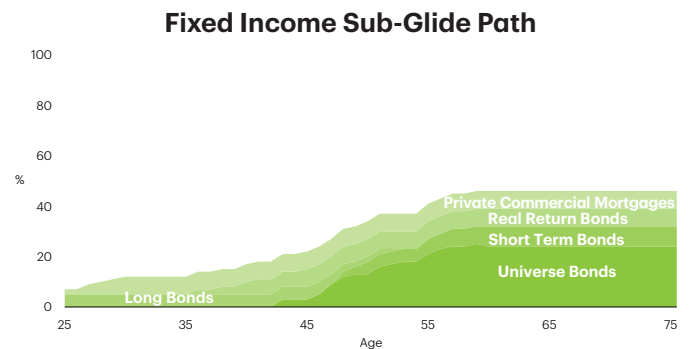
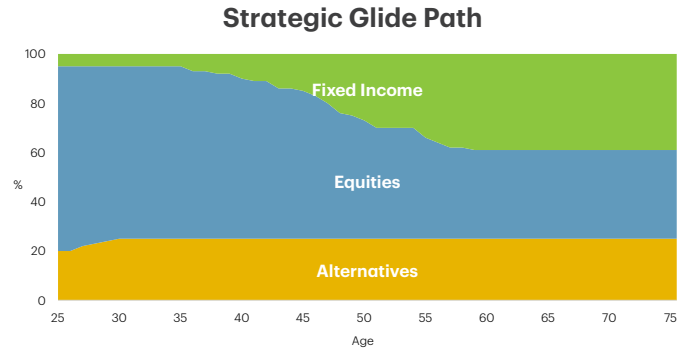
Chart 4: 2019 Annual Glide Path Update Constraints

Fund	Constraint	Asset Class	Constraint
Short Bonds	+/- 10%	Fixed Income	+/- 5%
Universe Bonds	+/- 10%		
Long Bonds	+/- 10%		
Real Return Bonds	+/- 10%		
High Yield	+/- 10%		
Canadian Equity	+/- 10%	Equity	+/- 5%
Global Equity	+/- 10%		
Global Income & Growth Equity	+/- 10%		
Low Volatility ACWI Equities	+/- 10%		
Private Commercial Mortgages	+/- 2%	Alternatives	+/- 5%
Real Estate	+/- 2%		
Infrastructure	+/- 2%		

Source: TD Asset Management. As at Sep 30, 2019.

The output of the Annual Glide Path Update process is the TDAM Strategic Glide Path, shown in Chart 5 and 6.

Chart 5 — TD Greystone Target Date Plus Funds – Strategic Glide Path and Sub-Glide Paths



Source: TD Asset Management. As at Dec 31, 2019.

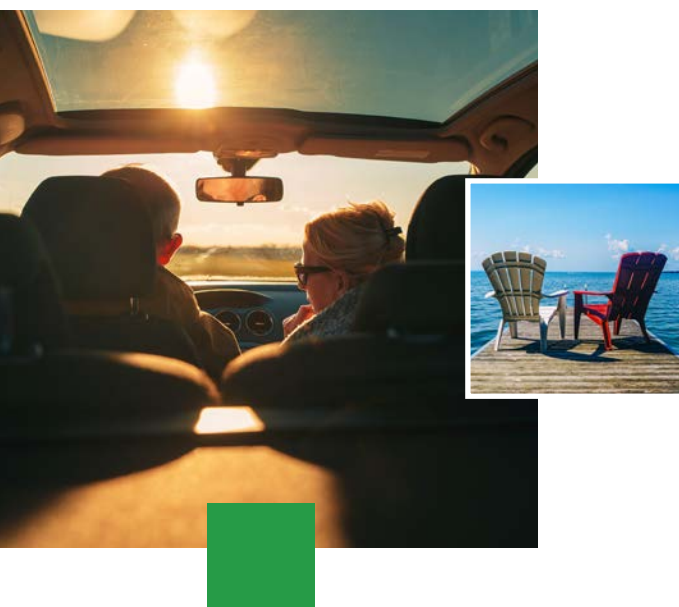


Chart 6: TD Greystone Target Date Plus Funds – Strategic Asset Mix for Underlying Vintages

(%)	2060	2055	2050	2045	2040	2035	2030	2025	2020	Retirement
Fixed Income	7.0	12.0	12.0	17.0	22.0	34.0	41.0	46.0	46.0	46.0
Canadian Fixed Income	0.0	0.0	0.0	0.0	3.0	13.0	21.0	24.0	24.0	24.0
Long Bond	5.0	5.0	5.0	5.0	5.0	2.0	0.0	0.0	0.0	0.0
Short Bond	0.0	0.0	0.0	0.0	0.0	5.0	6.0	8.0	8.0	8.0
Real Return Bond	0.0	0.0	0.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0
High Yield	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Private Commercial Mortgages ¹	2.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Equities	75.0	70.0	70.0	65.0	60.0	48.0	41.0	36.0	36.0	36.0
Canadian Equities	18.0	18.0	18.0	18.0	18.0	18.0	16.0	15.0	15.0	15.0
Low-Volatility ACWI Equities	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Global Equities	17.0	12.0	12.0	11.0	10.0	8.0	6.0	5.0	5.0	5.0
Global Income & Growth Equities	35.0	35.0	35.0	31.0	27.0	17.0	14.0	11.0	11.0	11.0
Alternatives	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0	18.0
Real Estate ²	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Infrastructure ³	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0

¹ TD Greystone Mortgage Fund. ² TD Greystone Real Estate LP Fund ³ TD Greystone Infrastructure Fund (Canada) LP II.
Source: TD Asset Management. As at December 31, 2019.

Summary of Changes

Overall, we saw a modest rotation from fixed income to equities across the glide path as yields fell through 2019. Within equities, we saw the addition of low-volatility ACWI equities, which was primarily sourced from global income and growth equities. Canadian small cap equities were re-allocated to Canadian growth equities. The implementation of equity changes will take place through 2020. Small Cap equities will migrate to core equities in February and Global Income & Growth will remain a proxy for low-volatility ACWI equities to start 2020.

Within fixed income, real return bonds, relative to long bonds, offer attractive pricing with the benefit of inflation protection and lower credit risk.

Through our Annual Glide Path Update, we also added a new vintage, the TD Greystone 2060 Target Date Plus Fund, intended for plan members who are retiring on or around the year 2060.

Performance

TDAM is proud to have achieved a five-year track record as of December 31, 2019. The Funds have demonstrated strong absolute and peer relative performance since inception. This performance has been achieved with below median peer relative standard deviation, resulting in a high peer-relative Sharpe Ratio. We believe this is particularly relevant as plan members are often subject to behavioural biases, triggered by investment volatility, which can negatively impact overall savings.

Chart 7: TD Greystone Target Date Plus Funds

As of December 31, 2019	1 Yr	3 Yrs	5 Yrs
Retirement Plus	11.5	7.1	7.1
Retirement Target Date Plus Benchmark ¹	11.0	6.5	6.5
Difference	0.5	0.6	0.6
2020 Target Date Plus	12.0	7.2	7.1
2020 Target Date Plus Benchmark ¹	11.0	6.4	6.5
Difference	1.0	0.8	0.6
2025 Target Date Plus	12.1	7.4	7.3
2025 Target Date Plus Benchmark ¹	11.0	6.6	6.6
Difference	1.1	0.8	0.7
2030 Target Date Plus	13.1	7.8	7.7
2030 Target Date Plus Benchmark ¹	11.9	6.9	7.0
Difference	1.2	0.9	0.7
2035 Target Date Plus	14.3	8.4	8.6
2035 Target Date Plus Benchmark ¹	13.0	7.4	7.7
Difference	1.3	1.0	0.9
2040 Target Date Plus	16.7	9.8	9.8
2040 Target Date Plus Benchmark ¹	15.0	8.5	8.7
Difference	1.7	1.3	1.1
2045 Target Date Plus	17.5	10.3	10.2
2045 Target Date Plus Benchmark ¹	15.9	8.9	9.1
Difference	1.6	1.4	1.1
2050 Target Date Plus	17.8	10.5	10.4
2050 Target Date Plus Benchmark ¹	16.3	9.2	9.4
Difference	1.5	1.3	1.0
2055 Target Date Plus	17.4	10.5	10.4
2055 Target Date Plus Benchmark ¹	16.4	9.3	9.5
Difference	1.0	1.2	0.9

¹ Details of the Target Date Plus benchmark are available upon request

Chart 8 — Since Inception Annualized Return

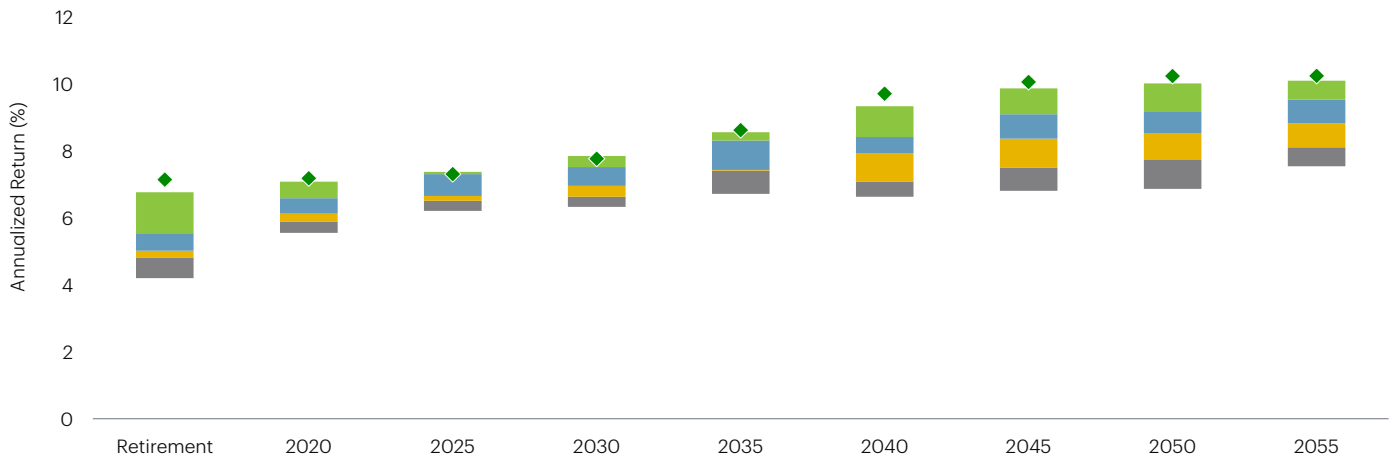


Chart 9 — Since Inception Annualized Standard Deviation

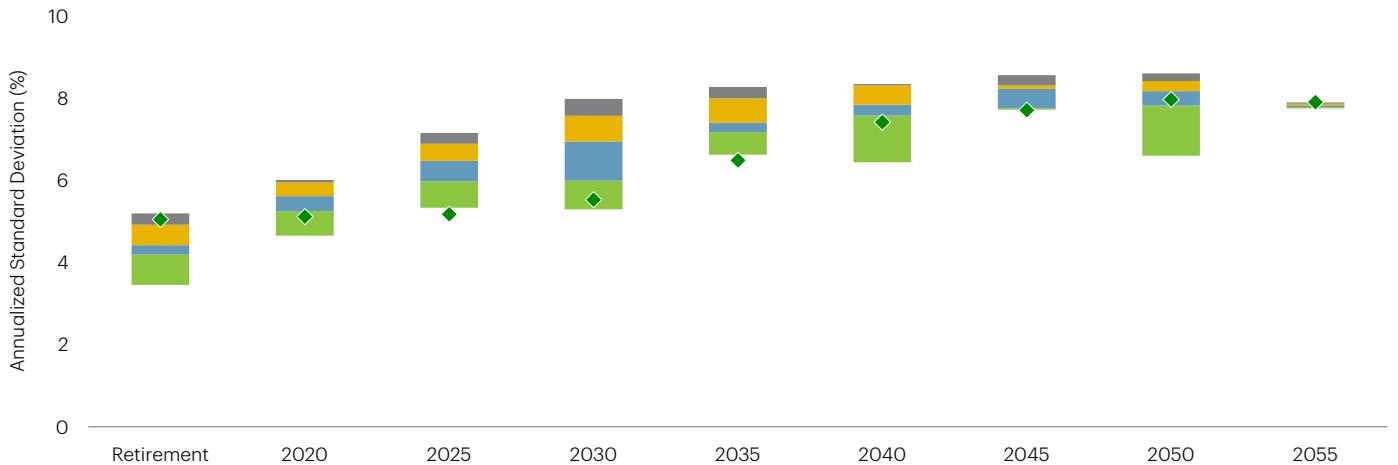
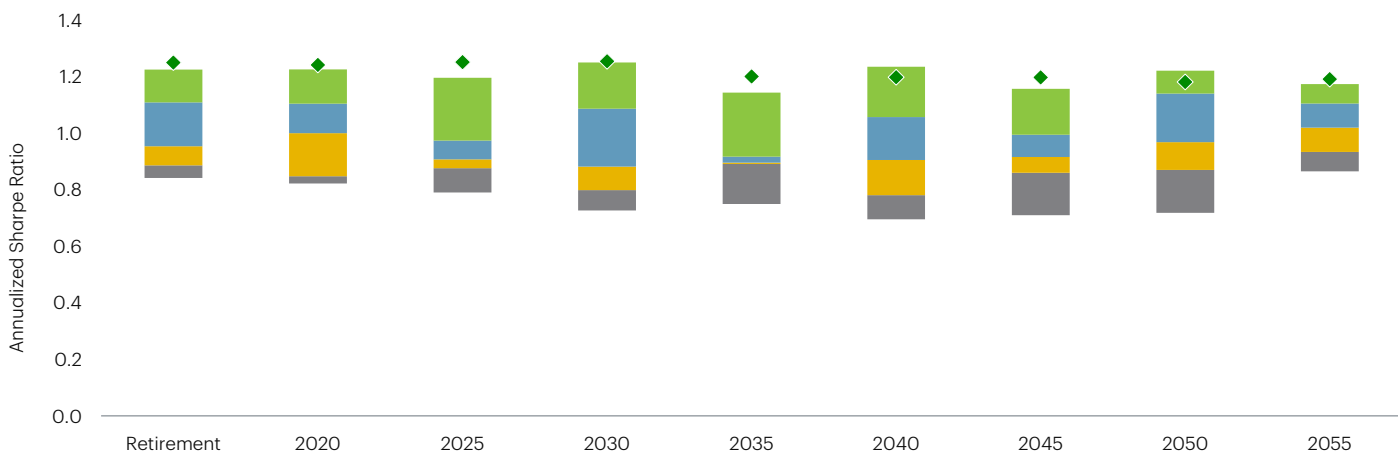


Chart 10 — Since Inception Annualized Sharpe Ratio



Inception is Jan 1, 2015 (5 years).

Source: eVestment Alliance, LLC. As at Dec 31, 2019. Data pulled Oct 15, 2019. Sharpe Ratio calculated using CIBC WM 91 Day Treasury Bill. Each TD Greystone Target Date Plus Fund is compared against Canadian dollar denominated peers within the respective vintage's eVestment peer group. Quartiles: 1st quartile = 5th to 25th percentile, 2nd quartile = 25th to 50th percentile, 3rd quartile = 50th to 75th percentile and 4th quartile = 75th to 95th percentile. Additional information about peer group members and relevant data is available upon request.

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