



2022 Report on the Funding of Defined Benefit Pension Plans in Ontario

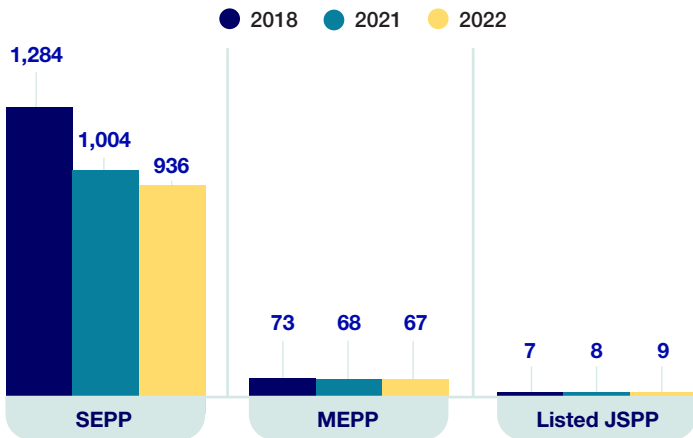
July 2023

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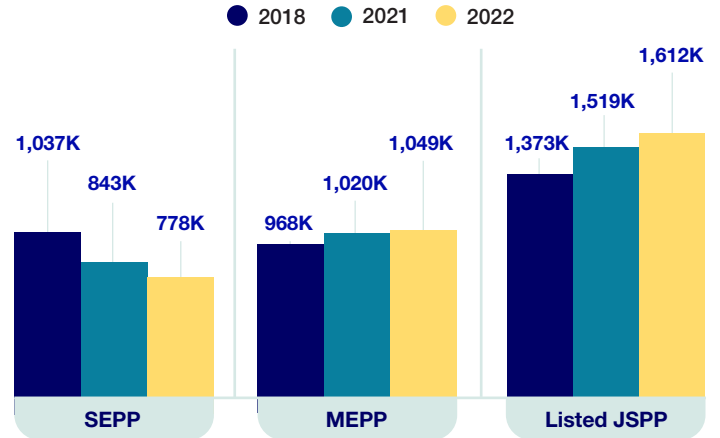
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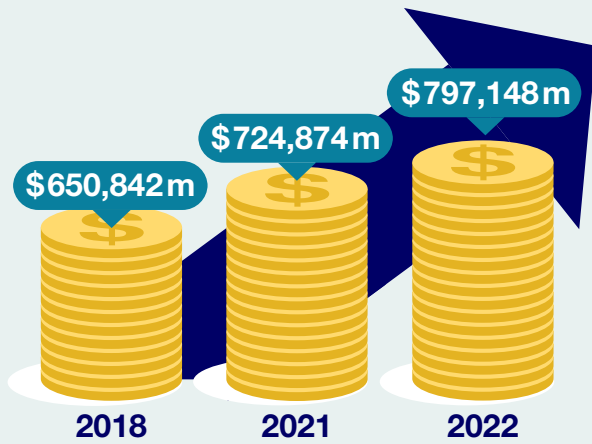
Number of pension plans



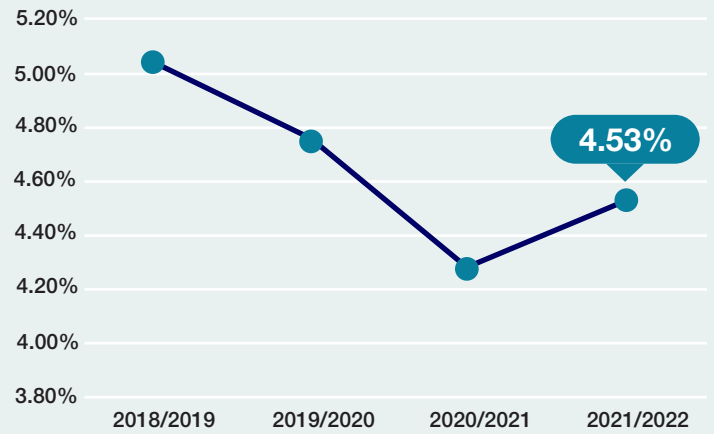
Number of members



Pension plan assets

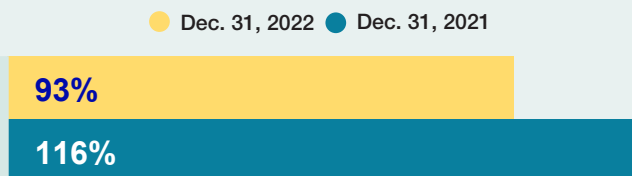


Going-concern interest rate trend

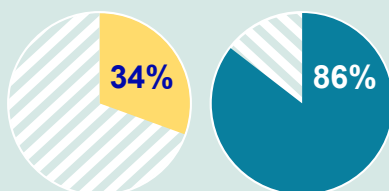


Going-concern funded status

Median going-concern funded ratio

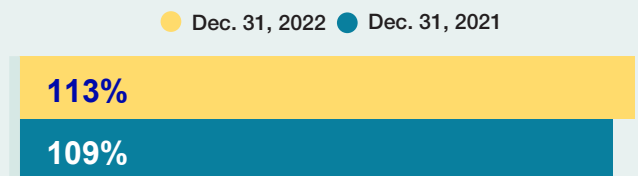


Plans fully funded

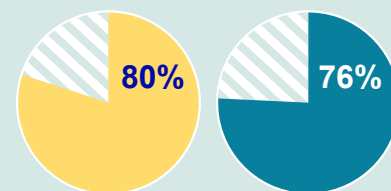


Solvency funded status

Median solvency funded ratio



Plans fully funded



1.0 Executive Summary

The Financial Services Regulatory Authority of Ontario (FSRA) is a self-funded regulatory agency that regulates Ontario registered pension plans in accordance with the Pension Benefits Act (PBA) and Regulation 909 (Regulation) or any other regulations under the PBA, as amended. FSRA's statutory objects as outlined under the Financial Services Regulatory Authority of Ontario Act, 2016 (FSRA Act) include:

- To promote good administration of pension plans.
- To protect and safeguard the pension benefits and rights of pension plan beneficiaries.

FSRA analyzes and prepares an annual report to provide pension stakeholders with up-to-date funding, investment and actuarial information related to defined benefit (DB) pension plans in Ontario. The information in this year's report (2022 Report) is based on the latest filed valuation reports for DB pension plans that have valuation dates between July 1, 2019 and June 30, 2022, and fund financial statements for the fiscal year ending between July 1, 2021 and June 30, 2022. Information is presented on an aggregate basis with no disclosure of plan-specific information.

Note that a primary purpose of these reports is to provide information that is factual and objective. Consequently, the impact of more recent events is generally not reflected in the analysis shown in this report. However, FSRA does monitor the estimated solvency funded position of pension plans on a quarterly basis which reflects plans' up-to-date experience – these can be viewed at [Estimated Quarterly Solvency Funded Status](#).

1.1 Guiding Principles and Prudential Supervision Framework

FSRA is a principles-based regulator, focused on outcomes consistent with its statutory objects. FSRA's guiding principles for the supervision of the pension sector are set out in an Approach guidance, the [Pension Sector Guiding Principles](#).

The information contained in this report is used by FSRA, in conjunction with other available data and analysis, to conduct its supervisory activities in accordance with prudential supervision framework. This same information is being made available to all stakeholders to inform and aid them in establishing and maintaining good governance, administration, investment, funding and risk management practices.

The information and analysis presented herein are derived from key actuarial, financial and investment data collected through the Actuarial Information Summary (AIS) and the Investment Information Summary (IIS) filed with FSRA. They provide a reliable and comprehensive picture of the state of DB pension plans in Ontario and insights into existing practices and emerging

trends. It can serve as a key source of information for the purposes of comparing and benchmarking the results of a pension plan against its peers.

Pension plan administrators and their advisors, in particular, may find the information helpful in conducting a regular review of the management of their pension plan.

1.2 Current Funding Regime

Significant changes took place in 2018 as Ontario ushered in a new pension funding regime for DB pension plans effective May 1, 2018. This is only the second annual report in which all plans will have filed an actuarial valuation report under the current 2018 funding regime. Key features of the funding framework include:

- Shortening the amortization period from 15 years to 10 years for funding a going-concern unfunded liability.
- Consolidating going-concern special payments into a single schedule when a new report is filed.
- Requiring the funding of a prescribed Provision for Adverse Deviations (PfAD), within the plan.
- Requiring funding on a solvency basis only if needed to improve the plan's funded status to 85% on a solvency basis.
- Introducing funding rules for benefit improvements and restricting contribution holidays to improve benefit security.

These changes apply to valuation reports filed on or after May 1, 2018 with a valuation date on or after December 31, 2017. However, these changes do not apply to jointly sponsored pension plans that are listed in subsection 1.3.1(3) of the Regulation (Listed JSPPs) – these JSPPs remain exempted from solvency funding. In addition, these changes also do not apply to Specified Ontario Multi-Employer Pension Plans (SOMEPPs), for whom temporary funding relief previously granted was extended until the date on which the first report is filed for a valuation date after the earlier of January 1, 2024 and the first anniversary of the date on which section 81.0.2 of the PBA (Conversion to Target Benefits) comes into force. During this period, SOMEPPs are exempt from the requirement to fund on a solvency basis.

Pension plans are only required to file valuation reports every three years unless their financial position falls below the threshold that would require an annual filing.

The 2018 funding reform substantially ends a series of temporary solvency funding relief measures that were introduced starting in 2009.

1.3 Key Findings

The 2022 Report’s key findings summarized below are based on actual information from actuarial valuation reports filed with FSRA with valuation dates between July 1, 2019 and June 30, 2022. Therefore, except as otherwise noted, the summary statistics drawn from the three-year period do not have a common valuation date. However, FSRA does provide the estimated median going-concern and solvency funded ratios of all plans measured as at December 31, 2022 in the key findings below.

In addition to the plans described above, there are approximately 230 pension plans registered outside of Ontario that have 52,000 Ontario beneficiaries – these plans do not file actuarial valuation reports with FSRA and are not included in the 2022 Report.

General funded status

1. The number of pension plans continues to trend lower, with a reduction of 68 single employer pension plans (SEPPs) and 1 multi-employer pension plan (MEPPs) compared to the 2021 Report on the Funding of Defined Benefit Pension Plans in Ontario ([2021 Report](#)), primarily as a result of windups and asset transfer transactions. There was one new Listed JSPP. The distribution of the 1,012 pension plans analyzed based on their most recently filed valuation report are as follows:

	July 1, 2019 - June 30, 2020	July 1, 2020 - June 30, 2021	July 1, 2021 - June 30, 2022	Total
Number of Plans	304	221	487	1,012
Percentage of Plans	30%	22%	48%	100%

2. Overall, compared to the 2021 Report, the funded position of the pension plans (as at their last filed valuation dates) has improved on both a going-concern basis and on a solvency basis:

	<u>2022 Report</u>	<u>2021 Report</u>
<u>Going-concern Basis</u>		
Median funded ratio	111%	108%
Percentage of plans fully funded	83%	76%
<u>Solvency Basis</u>		
Median funded ratio	102%	97%
Percentage of plans fully funded	56%	41%

3. In addition to looking at the last filed valuation date (on which funding requirements are based), FSRA also estimates the projected going-concern funded ratio of the plans at a common measurement date of December 31, 2022 (refer to Section 6). The estimated median going-concern funded ratio has declined to 93% at December 31, 2022 from 116% at December 31, 2021.
4. In the trend analysis (refer to Section 4), the average interest rate assumption used for going-concern valuations decreased from 5.05% to 4.53% over the four-year period from July 1, 2018 to June 30, 2022. Looking only at valuation dates between July 1, 2021 and June 30, 2022, only 6% of plans used an interest rate of 6.00% or higher and 29% used an interest rate below 4.00% (compared to 4% and 35%, respectively for those reports with valuation dates between July 1, 2020 and June 30, 2021). There was a 26 bps increase in the average discount rate over the last two periods – this can largely be attributed to an increase in long-term bond yields during this period. For example, the Canada long-term bond yields (as measured by CANSIM Series V39062) increased by 56 bps between December 31, 2020 and December 31, 2021 (the most common valuation dates in the two periods).
5. For plans that are required by the regulations to use a PfAD, plan actuaries have largely eliminated the use of an explicit margin in setting the going-concern interest rate assumptions. While there are some commonalities between the inclusion of PfADs and the use of explicit margins, there are differences which result in situations where the use of a margin would be appropriate or desirable depending on the plan's funding and investment policies. For example, the use of an explicit margin allows plans to build a reserve as good experience is realized, while providing flexibility to draw it down when experience is poor, thereby moderating fluctuations in funding levels and contributions.

6. 942 plans included in our analysis are required by the regulations to use a PfAD. For the purposes of determining the PfAD, the number of plans identifying themselves as closed and open are 731 and 211, respectively. The median PfAD for all 942 plans is 9.1% (9.6% in 2021 Report).
7. Minimum required contributions for 2023 including employer normal cost contributions, member required contributions and special payments, are estimated to increase by about 3% from the 2022 level (\$19.1 billion compared to the estimated \$18.5 billion for 2022). This consists of increases of \$545 million in employer normal costs, \$405 million in member required contributions, and a decrease of \$329 million in special payments.

Solvency funding

FSRA estimates the projected solvency ratio for all the pension plans from the dates of their latest filed reports to a common measurement date of December 31, 2022. The median projected solvency ratio is 113% as at December 31, 2022, compared to 109% as at December 31, 2021. Specifically,

- 80% of the plans had a projected solvency ratio greater than 100% (76% as at December 31, 2021).
- 16% of the plans had a projected solvency ratio between 85% and 100%.
- 4% of the plans had a projected solvency ratio below 85% (5% as at December 31, 2021).

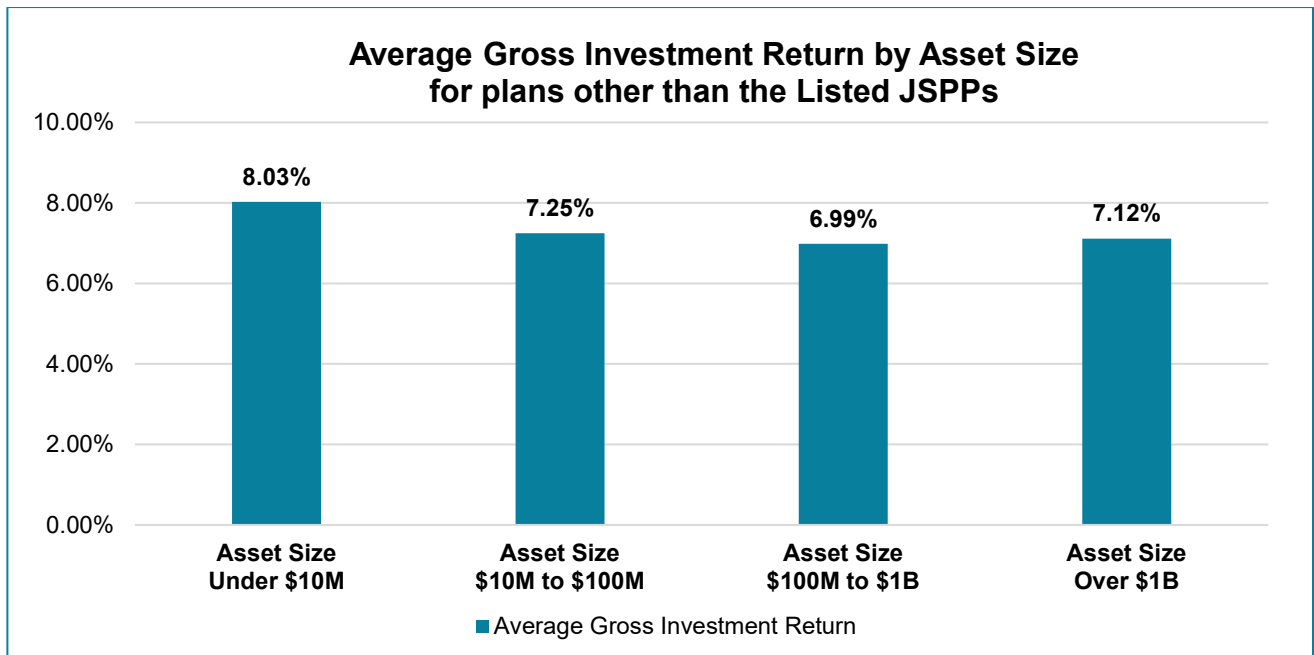
The improvement in the projected solvency ratio is primarily attributed to a significant increase in solvency valuation discount rates. However, this impact was mostly offset by double-digit negative investment returns in 2022.

The key remaining transitional solvency funding relief measure is for SOMEPPs. Of the 67 MEPPs that contain a DB provision, 58 have elected to be treated as a SOMEPP. These SOMEPPs represent 97% of the total plan membership covered by the 67 MEPPs.

Fund investment

1. The asset allocation of SEPPs remained relatively stable, with no significant changes observed in the allocation between fixed income and non-fixed income. In contrast, MEPPs experienced a 2.7% decrease in their fixed income allocation, accompanied by a 3.1% increase in their allocation to real estate. Listed JSPPs displayed more pronounced shifts in their asset allocation, with a notable 7.9% reduction in fixed income allocation and a corresponding increase of 6.8% in alternative investments.

- a. SEPPs and Listed JSPPs have more allocation to cash, short-term investments and fixed income assets (average of 42% vs. 31% for the MEPPs).
 - b. Listed JSPPs have substantially less allocation to public equities (average of 16% vs. 34% for the SEPPs and 46% for the MEPPs).
 - c. Listed JSPPs have substantially higher allocations to alternative investments (average of 38% vs. 10% for SEPP and 8% for MEPPs).
 - d. Listed JSPPs hold significantly higher levels of cash and short-term investments (average of 10.0% vs. 3.4% for SEPPs and 2.5% for MEPPs).
2. For fiscal years ending between July 1, 2021 and June 30, 2022 (excluding the Listed JSPPs), plans with assets under \$10 million had higher gross investment returns than larger plans.



3. The average gross returns, average investment and administrative fees for different types of pension plans are summarized as below:

	SEPP	MEPP	Listed JSPP
Average Gross Return	6.88%	14.16%	12.63%
Average Investment Fees	0.35%	0.44%	0.48%
Average Administrative Fees	0.53%	0.38%	0.22%
Average Total Fees	0.88%	0.82%	0.70%

There was a significant difference in the gross returns for SEPPs compared to both MEPPs and Listed JSPPs. Table 5.1 in the report provides additional details including the asset mix for these categories of plans, which shows large differences in their respective asset mixes. The difference in returns is attributable to asset mix differences – the performance of the various asset classes in the period covered by the IIS (calendar year 2021 for over 90% of the plans) diverged dramatically. In particular, bonds experienced negative single digit returns while equities and real estate had strong returns of 20%-30%. The allocation to bonds is much higher in SEPPs than in MEPPs or Listed JSPPs, which led to their underperformance.

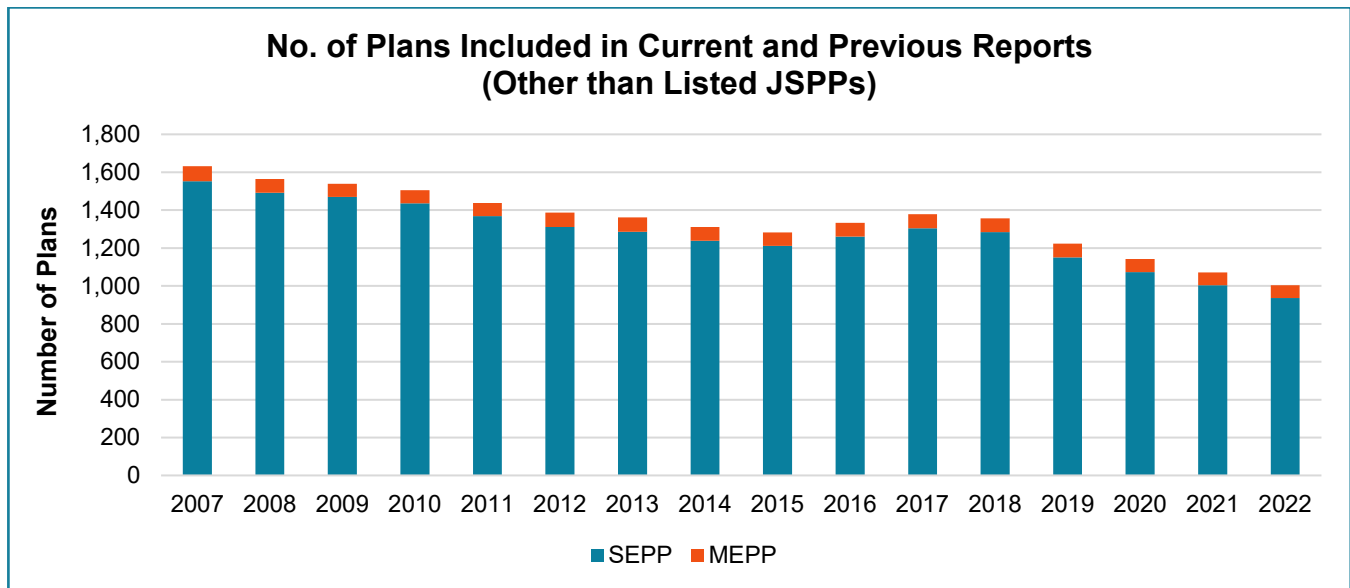
2.0 Funding Data

This section provides an analysis and summary of the funding data, including actuarial assumptions and methods, for DB pension plans with valuation dates between July 1, 2019 and June 30, 2022. The data was compiled from the AIS and actuarial valuation reports that FSRA received on or before the data cutoff date of December 31, 2022.

Generally, valuation reports must be filed once every three years on both a going-concern and solvency basis. However, solvency concerns revealed in an actuarial valuation report require annual filings until those concerns are eliminated. Early filings may be required when events such as plan mergers or sales of businesses occur and may also be done on a voluntary basis. Unless otherwise noted, the analysis in this 2022 Report is based on data from each plan’s most recently filed actuarial valuation report to avoid double counting.¹

For the purposes of this 2022 Report, the following plans are excluded in order to focus on the plans that are of most interest to stakeholders and to ensure that the results of our analysis are not skewed:

- Designated plans.
- Individual pension plans.
- Plans that have been wound up or are in the process of winding up.



¹ The Trends Analysis in Section 4 uses data from reports with valuation dates in the different periods and, therefore, may include more than one valuation report from any given pension plan.

Chart 2.1a, 2.1b and Table 2.1 present the profile of the 1,012 pension plans that have been included in the funding data analysis in this 2022 Report. Additional details on these plans are included in Appendix A.

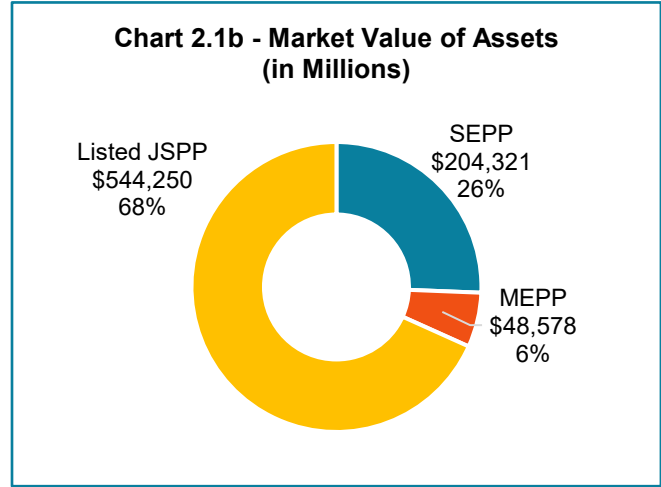
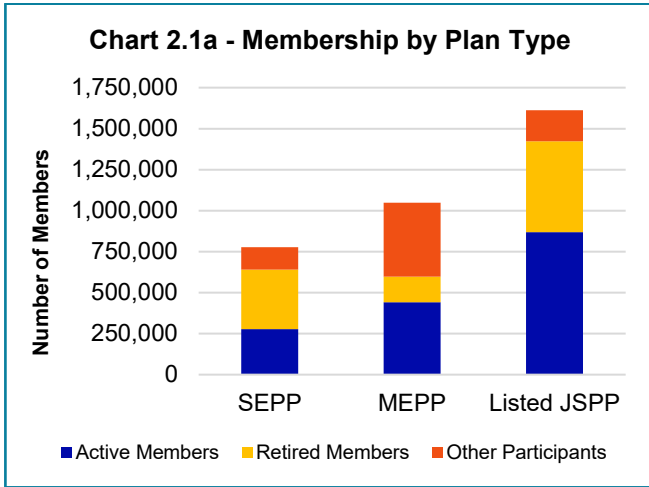


Table 2.1 – Summary of Plans Included

Plan/Benefit Type	# of Plans	Active Members	Retired Members	Other Participants	Total Membership	Market Value of Assets (in Millions)
Final Average	269	124,411	118,695	38,071	281,177	\$98,280
Career Average	62	11,946	9,156	4,999	26,101	\$3,731
Flat Benefit	127	17,781	15,486	8,851	42,118	\$7,228
Hybrid	305	112,239	194,200	69,318	375,757	\$85,468
Frozen DB & Hybrid	173	11,878	24,596	16,068	52,542	\$9,613
MEPP	67	442,119	156,356	450,162	1,048,637	\$48,578
Listed JSPP	9	868,974	553,830	188,770	1,611,574	\$544,250
Total	1,012	1,589,348	1,072,319	776,239	3,437,906	\$797,148
Average Age		49.1	72.5	51.5		

The total membership for MEPPs and Listed JSPPs grew by 2.8% and 6.1% respectively, compared to the 2021 Report. In terms of the asset size, MEPPs have grown by 15.0%, while Listed JSPPs have seen assets increase by 13.5%. In contrast, SEPPs have witnessed a decline in total membership of 7.7%, although there has been a slight increase of 0.6% in the market value of assets. These changes can be partially explained by the establishment of the University Pension Plan (UPP), a new Listed JSPP which became effective July 1, 2021. The UPP was created from the merger of six SEPPs sponsored by four Ontario universities which contributed to the overall increase in the membership and assets of Listed JSPPs and a corresponding decrease in SEPPs.

2.1 Summary of Funding Data

Of the 1,012 plans that were analyzed, which together cover 3,437,906 plan members, 172 plans (17%) were less than fully funded on a going-concern basis. These 172 underfunded plans cover 1,213,108 (35%) of the total plan members.

On a solvency basis, 450 plans (44%) of the 1,012 plans were less than fully funded. These 450 plans cover 1,938,874 plan members (56% of total members).

Tables 2.2 and 2.3 show the distribution of underfunded plans by plan/benefit type and by membership.

Table 2.2 – Distribution of Underfunded Plans on a Going-Concern Basis by Plan Type and Membership

Plan/Benefit Type	By Plan			By Membership		
	Total Number of Plans	Number of Underfunded Plans	% of Total Plans	Total Number of Members	Number of Members in Underfunded Plans	% of Total Membership
Final Average	269	43	16%	281,177	106,303	38%
Career Average	62	11	18%	26,101	1,933	7%
Flat Benefit	127	13	10%	42,118	4,021	10%
Hybrid	305	52	17%	375,757	34,372	9%
Frozen DB & Hybrid	173	42	24%	52,542	13,169	25%
MEPP	67	8	12%	1,048,637	488,218	47%
Listed JSPP	9	3	33%	1,611,574	565,092	35%
Total	1,012	172	17%	3,437,906	1,213,108	35%

Table 2.3 – Distribution of Underfunded Plans on a Solvency Basis by Plan Type and Membership

Plan/Benefit Type	By Plan			By Membership		
	Total Number of Plans	Number of Underfunded Plans	% of Total Plans	Total Number of Members	Number of Members in Underfunded Plans	% of Total Membership
Final Average	269	115	43%	281,177	158,338	56%
Career Average	62	39	63%	26,101	8,041	31%
Flat Benefit	127	60	47%	42,118	16,127	38%
Hybrid	305	119	39%	375,757	117,103	31%
Frozen DB & Hybrid	173	54	31%	52,542	19,688	37%
MEPP	67	59	88%	1,048,637	1,015,918	97%
Sub-Total	1,003	446	44%	1,826,332	1,335,215	73%
Listed JSP	9	4	44%	1,611,574	603,659	37%
Total	1,012	450	44%	3,437,906	1,938,874	56%

Table 2.4 provides summary information grouped by plan maturity (as measured by the proportion of solvency liabilities relating to pensioners versus the plan's total solvency liabilities).

Table 2.4 – Funding Information Grouped by Maturity

Proportion of Solvency Liabilities relating to Pensioners	# of Plans	Total Membership	Solvency Assets (in Millions)	Solvency Liabilities (in Millions)	Solvency Ratio	Ratio of Active Members to Pensioners
Less than 25%	106	131,836	9,776	10,939	89%	6.1 : 1
25% ≤ ratio < 50%	383	1,126,291	87,534	103,270	85%	2.5 : 1
50% ≤ ratio < 75%	348	447,406	124,330	123,073	101%	0.7 : 1
75% and over	166	120,799	30,811	29,282	105%	0.2 : 1
Sub-Total	1,003	1,826,332	252,451	266,564	95%	1.4 : 1
Listed JSP	9	1,611,574	543,391	456,128	119%	1.6 : 1
Total	1,012	3,437,906	795,842	722,692	110%	1.5 : 1

Tables 2.5 and 2.6 provide a more detailed breakdown of the going-concern and solvency funded ratios with respect to different types of DB pension plans. For all plans, the median funded ratio was 111% on a going-concern basis and 102% on a solvency basis. For the 67 MEPPs, 41 of them (all SOMEPPs) had a solvency ratio of less than 85%.

Table 2.5 – Going-Concern Funded Ratio (GCR)

Ratio (GCR)	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSPP	All Plans
GCR < 0.60	0	1	0	0	0	0	0	1
0.60 ≤ GCR < 0.80	1	2	2	5	3	0	0	13
0.80 ≤ GCR < 0.90	9	2	2	7	11	0	0	31
0.90 ≤ GCR < 1.00	33	6	9	40	28	8	3	127
1.00 ≤ GCR < 1.20	162	35	53	162	81	45	5	543
1.20 ≤ GCR	64	16	61	91	50	14	1	297
Total	269	62	127	305	173	67	9	1,012
Median Ratio	1.09	1.12	1.19	1.11	1.10	1.09	1.04	1.11

Table 2.6 – Solvency Funded Ratio (SR)

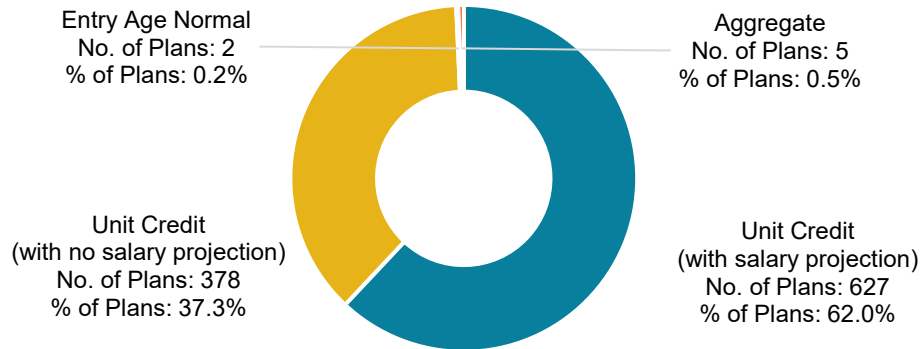
Ratio (SR)	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Sub-Total	Listed JSP	All Plans
SR < 0.60	0	1	2	1	0	4	8	0	8
0.60 ≤ SR < 0.80	3	3	1	4	4	30	45	0	45
0.80 ≤ SR < 0.85	4	2	1	1	1	8	17	1	18
0.85 ≤ SR < 0.90	38	11	20	29	9	8	115	0	115
0.90 ≤ SR < 1.00	70	22	36	84	40	9	261	3	264
1.00 ≤ SR < 1.20	125	19	53	145	78	4	424	4	428
1.20 ≤ SR	29	4	14	41	41	4	133	1	134
Total	269	62	127	305	173	67	1,003	9	1,012
Median Ratio	1.02	0.96	1.02	1.03	1.07	0.80	1.02	1.02	1.02

2.2 Summary of Actuarial Assumptions and Methods

The key actuarial assumptions and methods used in going-concern valuations are outlined below:

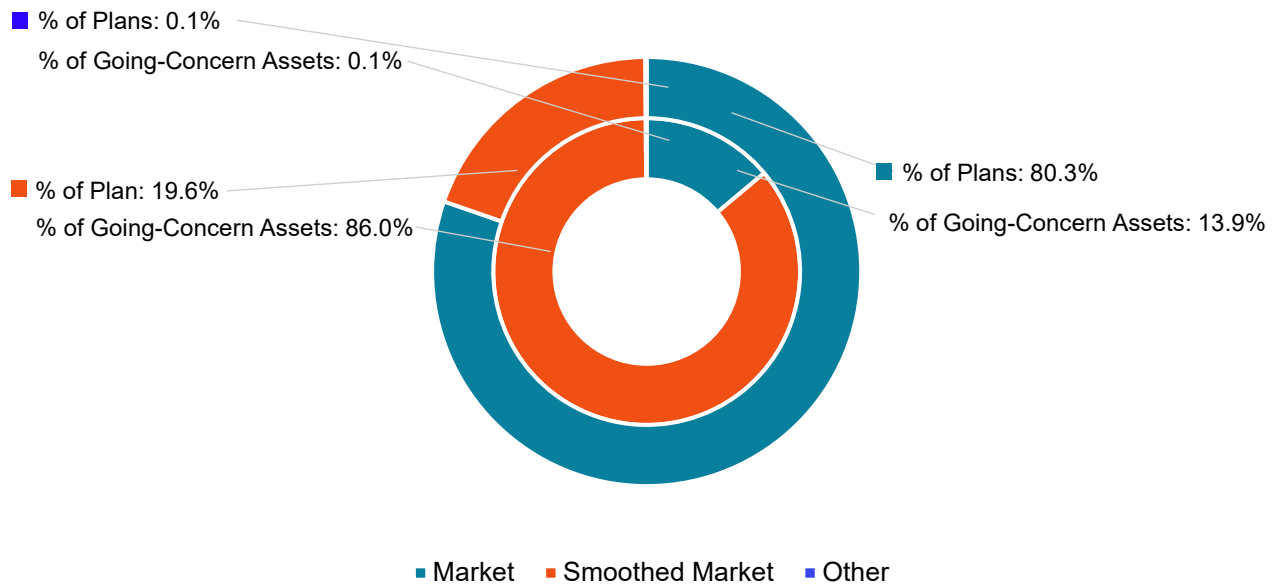
1. Almost all the plans used the unit credit cost method (with salary projections for plans with benefits based on final average earnings) to calculate going-concern liabilities.

Chart 2.7 - Liability Valuation Method



2. Virtually all plans used a market or market-related value of assets. However, although only 19.6% of plans use a smoothed market value method, they account for almost 86% of the total going-concern assets. Notably, almost all Listed JSPPs use smoothed assets, and they account for 68% of the total going-concern assets.

Chart 2.8 - Asset Valuation Method



3. For going-concern valuations, almost all plans used mortality rates based on the Canadian Pensioners' Mortality tables (CPM-RPP2014) and improvement scales published in the Final Report, Canadian Pensioners' Mortality on February 13, 2014 by the Canadian Institute of Actuaries (2014 CIA CPM Study). The 2014 CIA CPM Study includes three new sets of mortality tables as well as two sets of improvement scales. The three mortality tables are:

- 2014 Mortality Table (CPM2014) – developed from the combined experience exhibited under the public and private sector plans.
- 2014 Public Sector Mortality Table (CPM2014Publ) – based on the separate experience exhibited under the public sector plans.
- 2014 Private Sector Mortality Table (CPM2014Priv) – based on the separate experience exhibited under the private sector plans.

Table 2.9 – Mortality Assumption

Mortality Base Table	# of Plans	% of Plans	Adjustment		
			# of Plans		Median Adjustment
			Male Mortality	Female Mortality	
CPM2014 Combined	120	11.8%	29	28	105%
CPM 2014 Public	87	8.6%	48	46	95%M,95%F
CPM 2014 Private	783	77.4%	288	278	105%
Other (including Plan Specific)	22	2.2%	1	1	n/a
Total	1,012	100.0%			

55% of the plans which used the 2014 Public Sector Mortality Table made mortality adjustments, compared to 24% for 2014 Mortality Table and 37% for Private Sector Mortality Table.

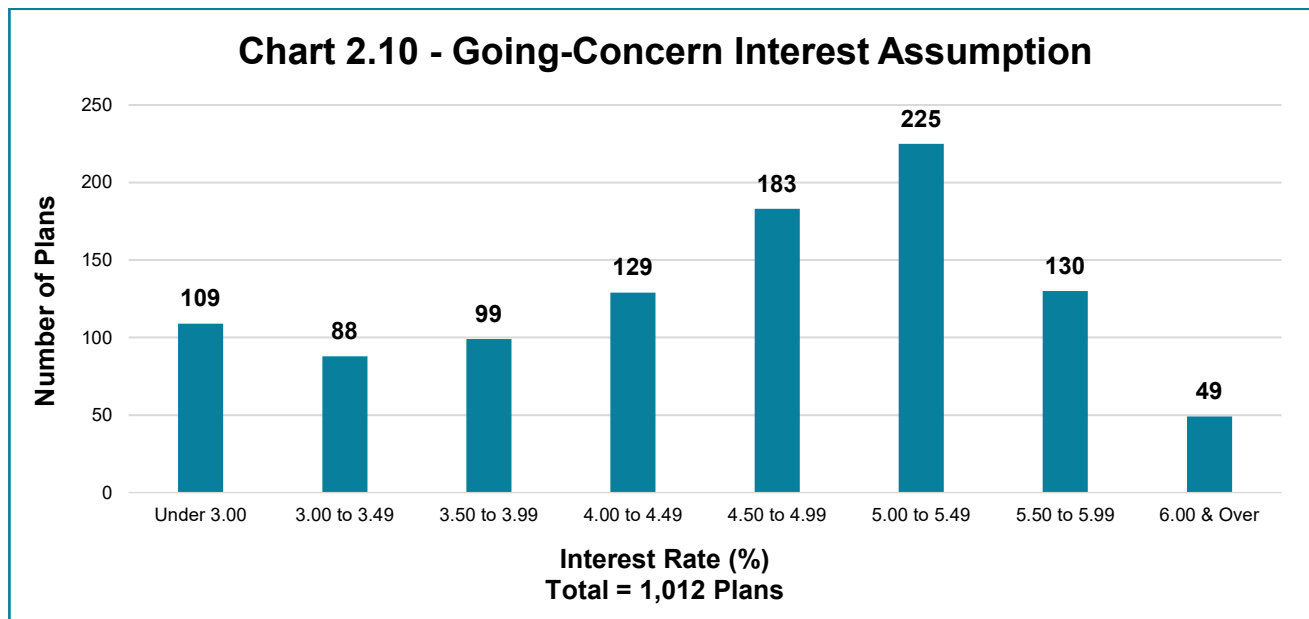
The 2021 Report revealed that, according to Statistics Canada, life expectancy fell significantly in 2020, coinciding with increased mortality rates for most age groups. The COVID-19 pandemic was clearly the major cause of these observations. With the World Health Organization having downgraded COVID-19 from an emergency situation to one of managing it alongside other infectious diseases, long-term longevity expectations appear to

be largely unchanged from pre-pandemic levels. Plan sponsors and their actuaries should be aware of, and regularly assess, the longevity risk and its impact on the pension plans.

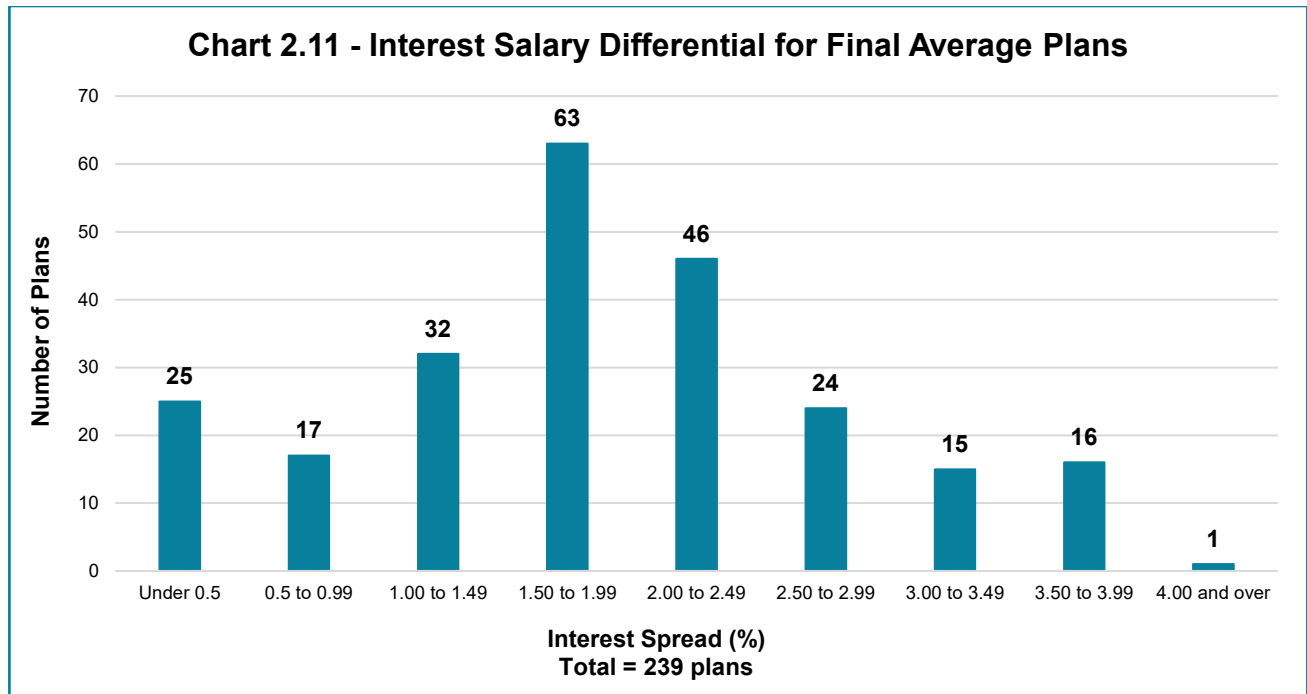
- Interest rate assumptions used to value the going-concern liabilities have decreased relative to prior years. Compared to the 2021 Report, the use of a going-concern interest rate assumption of 5.50% or higher has declined by 3% while the use of an assumption of 4.00% or lower has increased by 3%.

Chart 2.10 shows the distribution of going-concern interest rate assumptions used in the most recently filed valuation reports. Overall, less than 2.5% of plans used an assumption over 6.00%, while more than 80% of plans used an assumption less than 5.50%.

The 2018 funding regime introduced the requirement for certain plans to hold a Provision for Adverse Deviations (PfAD). Our analysis indicates that the use of a PfAD was almost always accompanied by the elimination of a margin previously included in the going-concern interest rate. Of the plans that were required by the regulations to use a PfAD, less than 4% maintained an explicit margin in developing their going-concern interest rate assumption. By contrast, about 90% of the pension plans which were not required to have a PfAD used an explicit margin in their going-concern interest rate assumption. FSRA will continue to monitor these developments to detect emerging trends in order to understand their implications on benefit security and pension risk management.



5. For final average earnings plans, the difference between the interest assumption and the salary increase assumption used in going-concern valuations, typically fell within a range of 1.0% to 2.5% inclusive. This accounts for 59% of all plans providing final average benefits. The average spread between the interest assumption and the salary increase assumption narrowed to 1.78% from 1.90% in the 2021 Report.



6. Table 2.12 shows the provision for wind up expenses used in solvency valuations, grouped by plan membership size, including active members, former members and other plan beneficiaries.

The expense allowance is also expressed as average dollar amounts per plan and per plan member. The average expense allowance per member generally decreases as plan membership size increases. The opposite pattern appears for plans with 10,000 or more members. Since there are only a small number of plans in the last two size categories (i.e., more than 10,000 members), greater caution should be exercised when interpreting the results for plans of this size.

The average per member wind up expense allowances are generally comparable to those reported in the 2021 Report.

Table 2.12 – Provision for Wind Up Expenses

Plan Membership	# of Plans	Total Membership	Wind Up Expenses		
			Total Wind-Up Expenses	Average Per Plan	Average Per Member
<100	340	15,178	\$25,073,920	\$73,747	\$1,652
100-499	359	84,762	\$61,025,800	\$169,988	\$720
500-999	113	80,798	\$37,285,800	\$329,963	\$461
1,000-4,999	134	285,867	\$94,152,600	\$702,631	\$329
5,000-9,999	31	222,048	\$47,006,000	\$1,516,323	\$212
10,000-49,999	26	486,821	\$173,916,000	\$6,689,077	\$357
50,000+	9	2,262,432	\$981,000,000	\$109,000,000	\$434
All Plans	1,012	3,437,906	\$1,419,460,120	\$1,402,629	\$413

3.0 2018 Funding Regime for DB Plans

A new funding framework for most DB pension plans was implemented through O. Reg. 250/18, with most provisions coming into force on May 1, 2018. These funding provisions apply to actuarial valuations filed after April 30, 2018 with a valuation date of December 31, 2017 or later. The new funding rules do not apply to Listed JSPPs. The changes also do not apply to SOMEPPs but do apply to MEPPs providing DB pensions that are not SOMEPPs. This is only the second annual report in which all plans will have filed an actuarial valuation report under the current 2018 funding regime.

This funding reform substantially ends a series of temporary solvency funding relief measures that were introduced starting in 2009.

3.1 Current Funding Framework

O. Reg. 250/18 made substantial changes to both the going-concern and solvency funding rules.

Going-concern funding

Pension plans are required to establish and fund a Provision for Adverse Deviations (PfAD) on a going-concern basis.

Going-concern unfunded liabilities are amortized over a period not exceeding 10 years with special payments commencing up to one year after the valuation date. These going-concern special payments (with the exception of those related to benefit improvements and benefit credits prior to the effective date of the plans) are consolidated at each valuation date into a single payment schedule.

The PfAD is calculated as a percentage that is applied to the going-concern liabilities as well as the normal costs. However, liabilities and normal costs relating to escalated adjustments may be excluded for this purpose. The PfAD is established as the sum of three components:

1. Open/closed plan component

The first component depends on whether the plan meets the definition of a closed plan. According to subsection 11.2(1) of the Regulation, a “closed plan” is defined as “a pension plan,

- a. That has no members who are entitled to defined benefits.

- b. In which at least 25 per cent of the members of the plan who are entitled to defined benefits are in a class or classes of employees from which new members are not permitted, according to the terms of the plan, to join the plan and accrue defined benefits”.

A fixed component of 5.0% is applicable for closed plans and 4.0% is applicable for plans that are not closed plans.

2. Asset mix component

The second component depends on the plan’s target asset allocation to fixed income assets (subject to a prescribed minimum credit rating), and to non-fixed income assets. The asset mix component of the PfAD ranges between 0% and 23% for closed plans and between 0% and 12% for plans that are not closed plans.

3. Benchmark Discount Rate (BDR) component

The third component is a function of the plan’s gross going-concern interest rate in relation to the benchmark discount rate (BDR) prescribed in the Regulation. Our analysis indicates about 18% of the open plans and 11% of the closed plans have a non-zero BDR component.

Table 3.0 – BDR Components

Type	# of Plans	Average by which Gross GC Rate exceeds the BDR	Average BDR Component
Open	37	0.39%	5.47%
Closed	79	0.27%	3.66%
Total	116	0.31%	4.23%

The average BDR component for open plans is higher than for closed plans because a higher proportion of open plans use a more aggressive gross going-concern discount rate assumption (relative to the BDR) than closed plans and also because the duration of the plan liabilities are generally higher in open plans.

Solvency funding / reduced solvency deficiency

No solvency funding is required for plans that are at least 85% funded on a solvency basis. Solvency deficiencies below the 85% threshold, defined in the Regulation as a “Reduced Solvency Deficiency” must be amortized over a period not exceeding 5 years with solvency special payments commencing no later than one year after the valuation date.

The reduced solvency deficiency, as defined in section 1.3.2 of the Regulation, is the amount by which “A” exceeds “B” where,

“A” is the sum of,

- a. 85 per cent of the pension plan’s solvency liabilities.
- b. 85 per cent of the pension plan’s solvency liability adjustment.
- c. The pension plan’s prior year credit balance as of the valuation date.

“B” is the sum of the pension plan’s solvency assets and the solvency asset adjustment as of the valuation date.

Available actuarial surplus

Under the funding regime, a plan sponsor cannot take a contribution holiday unless a cost certificate certifying that the plan has available actuarial surplus is filed with FSRA within 90 days of the beginning of the plan fiscal year. Available actuarial surplus (for a plan for which special payments are not required or deferred), as defined in section 7.0.2 of the Regulation, is the lesser of the following:

- a. The amount by which the value of the assets of the pension plan, determined on a going-concern basis, including accrued and receivable income but excluding the amount of any letter of credit held in trust for the pension plan, exceeds the sum of going-concern liabilities, the amount equal to the provision for adverse deviations in respect of going-concern liabilities and the prior year credit balance; and
- b. Whichever of the following amounts applies to the plan:
 - In the case of a plan that is a public sector pension plan, the amount that, if it were deducted from the solvency assets of the pension plan, would reduce the solvency ratio to 1.05.
 - In the case of any other plan, the amount that, if it were deducted from the solvency assets of the pension plan, would reduce the transfer ratio to 1.05.

Of the pension plans included in the 2022 Report, 942 of the plans are required to have a PfAD. Table 3.1 presents a profile of these pension plans and Table 3.2 summarizes the PfAD components.

Table 3.1 – Plans Required to have a PfAD

Type	# of Plans	Active	Retired	Other	Total Membership	Market Value of Assets	Going-Concern Liabilities	Average GC Ratio
						(in Millions)		
Open	211	163,597	131,773	52,513	347,883	100,240	92,539	114.9%
Closed	731	120,460	209,577	90,941	420,978	96,435	84,500	110.0%
Total	942	284,057	341,350	143,454	768,861	196,675	177,040	110.9%

Compared to the 2021 Report, the total number of open and closed plan decreased from 1,010 to 942. This reduction was primarily driven by a decrease in the number of closed plans. In general, open plans exhibit larger asset sizes and membership sizes compared to closed plans. On average, open plans have asset sizes that are 3.6 times larger than the closed plans. Similarly, the average membership of open plans exceeds that of closed plans by approximately 2.8 times.

Table 3.2 – PfAD Components

Type	# of Plans	Asset Mix Component		BDR Component			Median PfAD
		Median Fixed Income %	Median Asset Mix PfAD	Median BDR	Median Gross GC Rate	# Plans BDR > GC Rate	
Open	211	40.00%	4.0%	5.8%	5.4%	174	8.0%
Closed	731	52.00%	4.8%	5.3%	4.8%	652	10.0%
Total	942	50.00%	4.0%	5.4%	5.0%	826	9.1%

Open plans have a slightly lower median PfAD of 8.0% compared to closed plans at 10.0%. There has been a slight decrease in the median PfAD for all plans from 9.6% in the 2021 Report to 9.1% in this analysis.

3.2 Specified Ontario Multi-Employer Pension Plans (SOMEPPs)

In August 2007, a temporary funding framework applicable to SOMEPPs was implemented. A MEPP that meets the definition and satisfies the eligibility criteria described in the Regulation is eligible to elect SOMEPP status. Any MEPP that does not meet the prescribed definition and eligibility criteria for SOMEPP status or chose not to elect that status are required to continue to fund on a solvency basis.

SOMEPPs are temporarily exempt from solvency funding; Contributions to these plans during the period covered by the valuation report must not be less than the sum of:

- The normal cost.
- The remaining special payments for any previously established going-concern unfunded liability.
- The special payments for any new going-concern unfunded liability determined in the valuation report.

Any new going-concern unfunded liability must be liquidated over a period of 12 years. Furthermore, there are accelerated funding requirements for benefit improvements, requiring any increase in the going-concern unfunded liability as a result of the improvements to be liquidated over a period of eight years under prescribed conditions. There is no requirement to fund on a solvency basis during the period of temporary solvency funding relief, although solvency valuations are still required to be performed and their results must be set out in the valuation report.²

Effective July 1, 2018, this temporary exemption for solvency funding was extended until the date on which the first report is filed for a valuation date after the earlier of January 1, 2024 and the first anniversary of the date on which section 81.0.2 of the PBA (Conversion to Target Benefits) comes into force.

The following tables provide selected statistics on the MEPPs that contain a DB provision. Of these 67 MEPPs, 58 of them (covering over 97% of the total DB MEPP membership) have elected to become SOMEPPs.

² More information on SOMEPPs is available at: <https://www.fsrao.ca/industry/pensions/multi-employer-pension-plans/funding-rules-specified-ontario-multi-employer-pension-plans-extended>

Table 3.3 – Membership Information

	Total (Median) Membership Count				Total
	# of Plans	Active Members	Retired Members	Other Participants	
SOMEPPs	58	434,814 (1,272)	147,449 (751)	440,005 (1,023)	1,022,268 (3,192)
Non-SOMEPPs	9	7,305 (117)	8,907 (113)	10,157 (51)	26,369 (612)
Total (All DB MEPPs)	67	442,119 (1,179)	156,356 (658)	450,162 (957)	1,048,637 (3,114)

Table 3.4 – Funding Information

	Total (Median) Value			Solvency Ratio
	Market Value of Assets	Solvency Assets [‡]	Solvency Liabilities	
	(in Millions)			
SOMEPPs	\$45,561 (\$278)	\$45,382 (\$277)	\$64,846 (\$346)	70.0% (75.2%)
Non-SOMEPPs	\$3,017 (\$50)	\$3,029 (\$49)	\$2,605 (\$53)	116.3% (114.1%)
Total (All DB MEPPs)	\$48,578 (\$229)	\$48,411 (\$228)	\$67,451 (\$307)	71.8% (79.9%)

[‡]Market value of assets less provision for wind up expenses

The plans that qualify as SOMEPPs tend to be significantly larger than non-SOMEPPs, when measured by the size of their assets, liabilities or plan membership. For example, the median solvency liabilities for SOMEPPs is about 6.5 times that of the non-SOMEPPs.

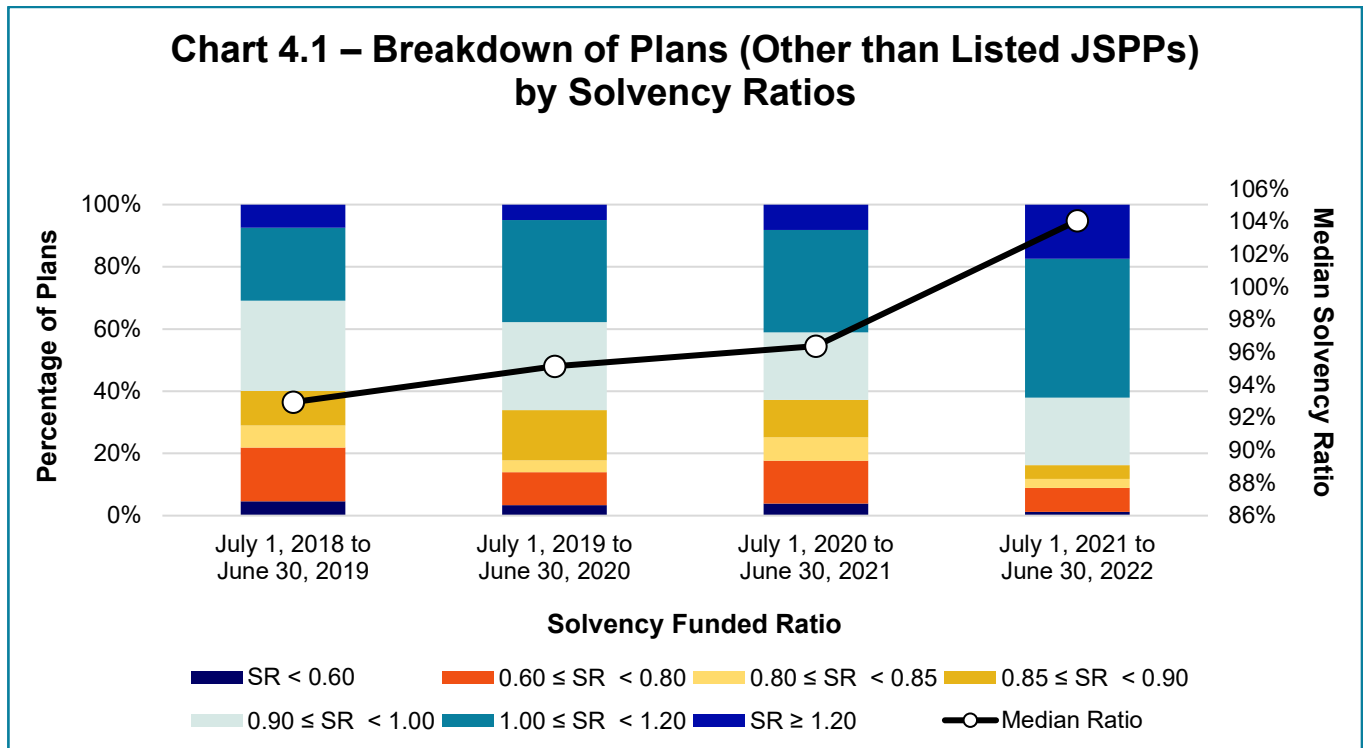
In terms of funding levels, SOMEPPs are significantly less well funded than non-SOMEPPs. The median solvency ratio for SOMEPPs is 75% compared to almost 114% for non-SOMEPPs. Overall, the funding levels for both have improved significantly compared to 2021 Report.

4.0 Trends Analysis

The following trends analysis incorporates data from all filed reports with valuation dates between July 1, 2018 and June 30, 2022 and, therefore, may include more than one valuation report from any given pension plan.

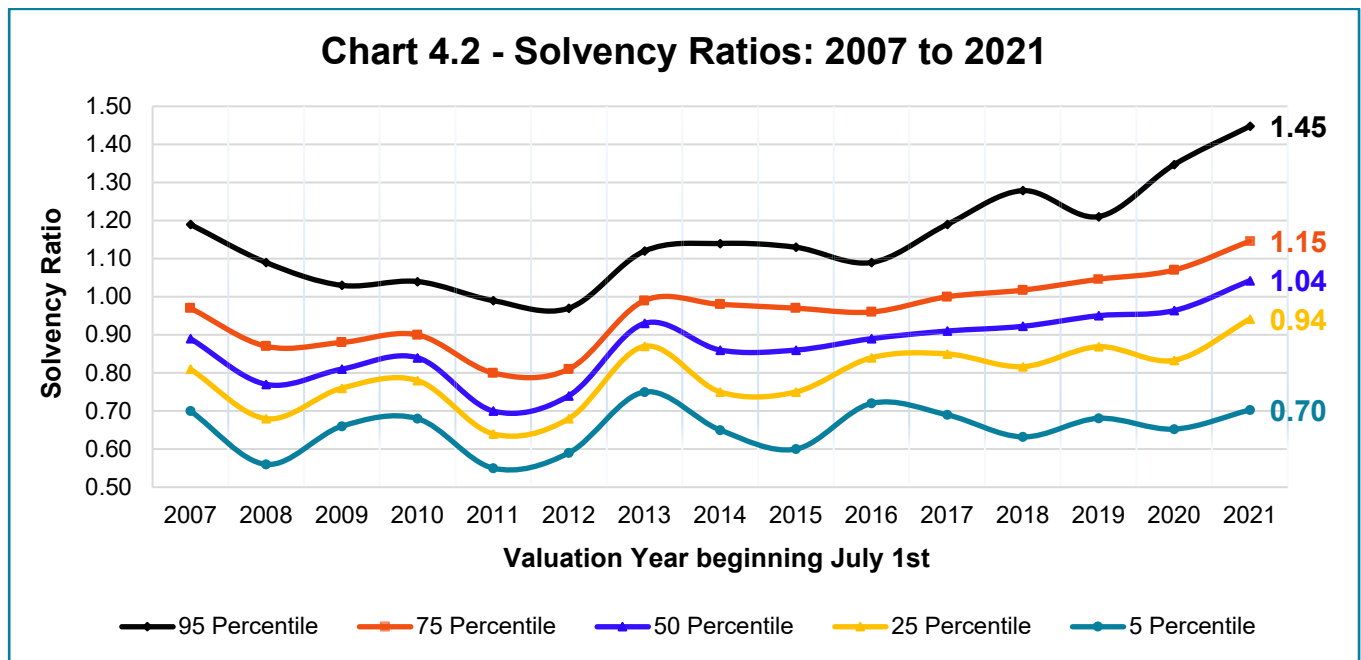
4.1 Solvency Funded Status

Chart 4.1 (additional details available in Appendix B) shows a breakdown of plans by solvency ratios for the past four annual valuation periods beginning on July 1 from 2018 to 2021. The majority of plans have a valuation date of either December 31 or January 1.

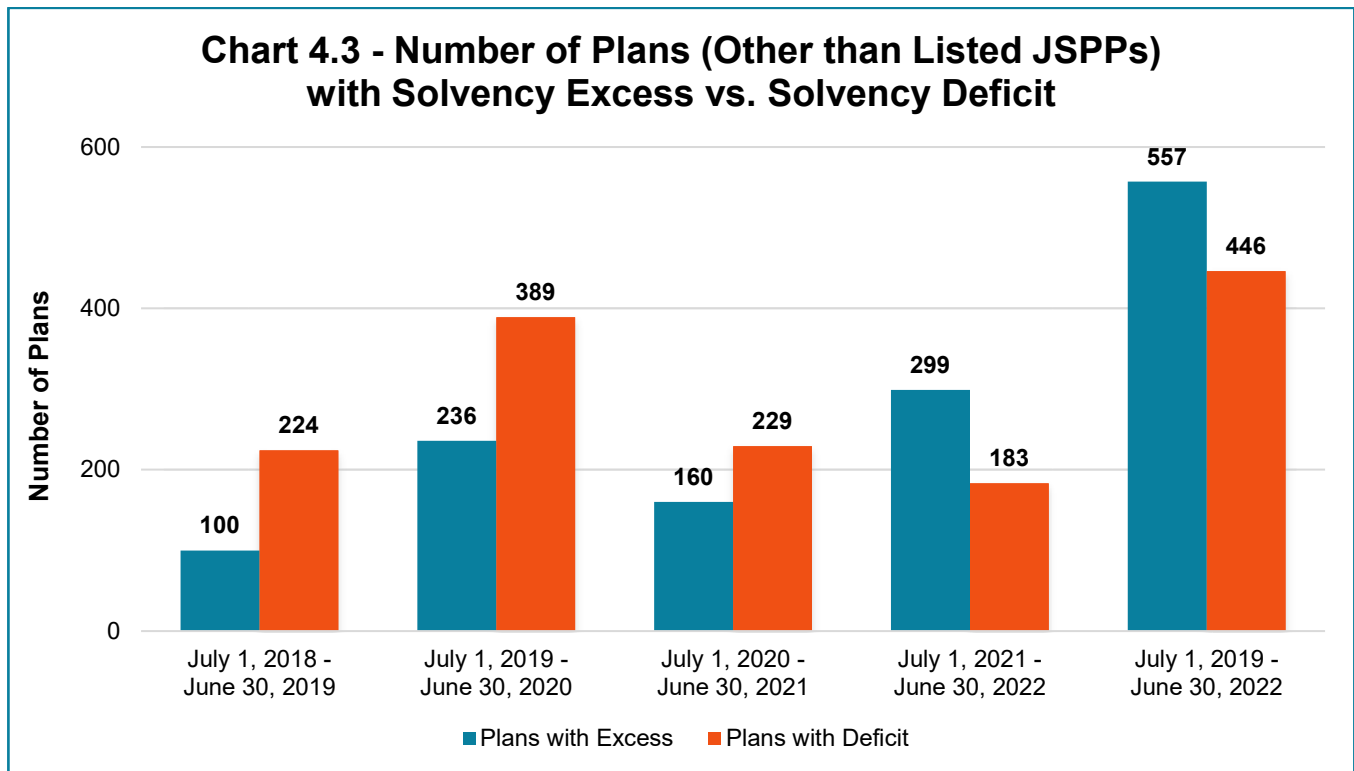


The percentage of plans with a solvency ratio less than 0.85 has decreased significantly from 25.2% during the 2020/2021 valuation period to 11.8% in the 2021/2022 valuation period. The proportion of underfunded plans on a solvency basis (i.e., a solvency ratio less than 1.0) declined gradually from 69.1% during the 2018/2019 valuation period to 58.9% in the 2020/2021 valuation period, with a sharp decrease to 38.0% in the 2021/2022 valuation period. The most notable factor for the significant improvement is the upward trend in the solvency discount rates which positively impacts the solvency funded ratio by reducing the pension liabilities. Of course, there are other factors at play such as positive investment performance, use of de-risking strategies, etc.

Chart 4.2 shows the distribution of solvency ratios at different percentiles from 2002 to 2021. There was significant volatility in the solvency ratios from the 2007 valuation period to about the 2015 valuation period. Since that time, the median solvency ratio has seen fairly steady and gradual improvement, although there remains volatility in terms of the distribution of these ratios above and below the median.

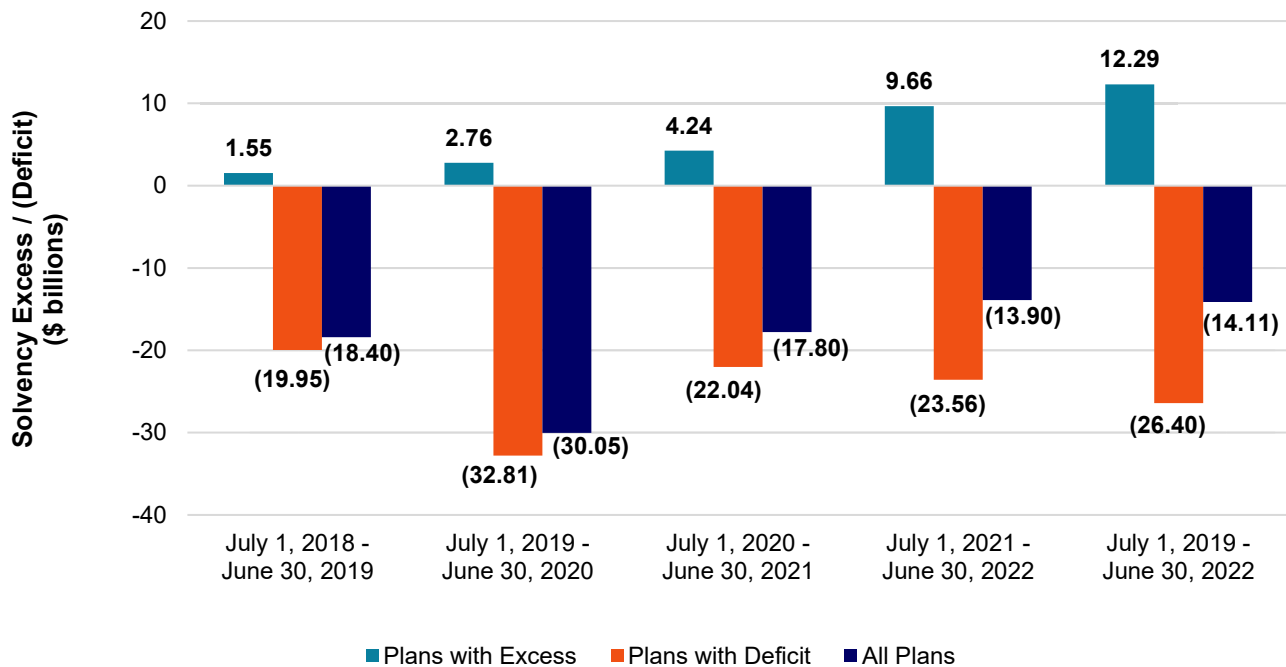


Charts 4.3 and 4.4 compare plans with a solvency excess to those with a solvency deficit for each of the four valuation periods from 2018/2019 to 2021/2022, as well as for the three-year valuation period from July 1, 2019 to June 30, 2022.³ Chart 4.3 compares the number of plans and Chart 4.4 compares the amount of solvency excess or deficit. For the first time since monitoring began, the number of plans with solvency excess surpassed the number of plans with solvency deficit (in the 2021/2022 valuation period).



³ Individual valuation periods include those plans that filed a report with a valuation date that fell during that individual period. The July 1, 2019 - June 30, 2022 period includes only the last funding valuation report filed. The total number of plans included in each of the valuation periods is, therefore, higher than the number of plans included in the combined period.

Chart 4.4 - Amount of Solvency Excess / (Deficit)



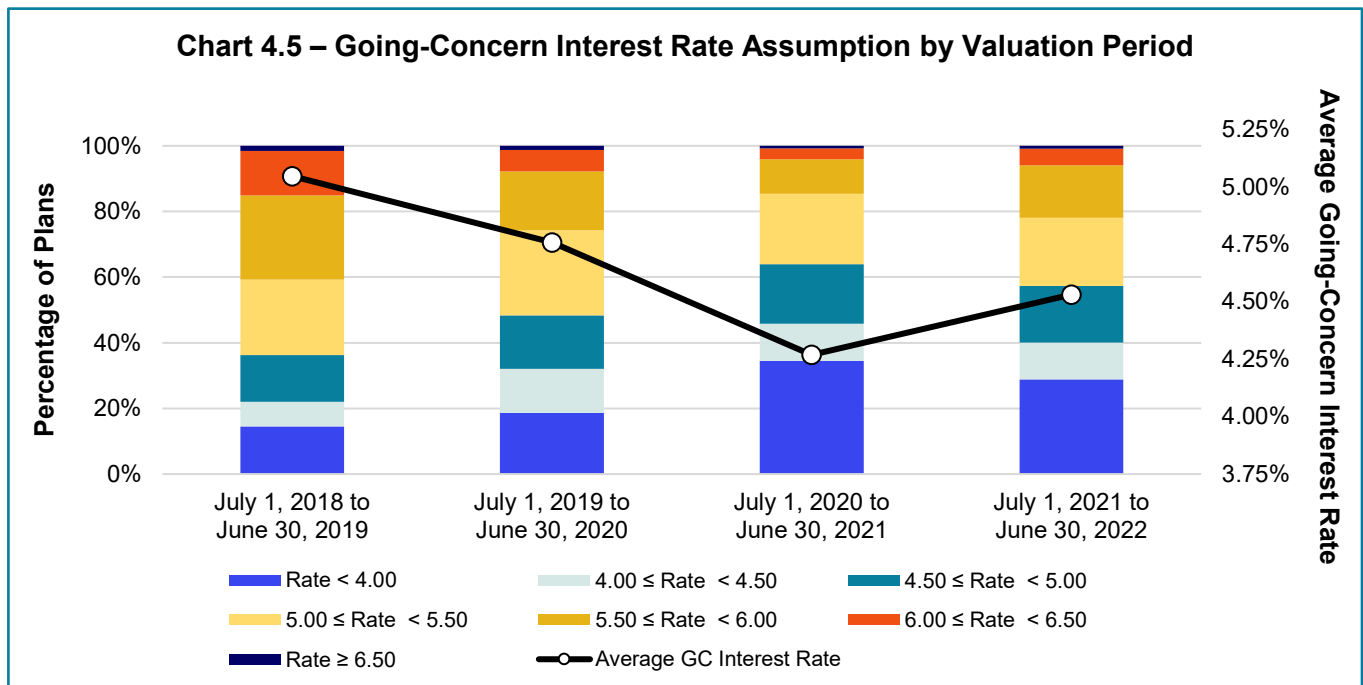
On a dollar amount basis, the latest filed reports during the July 1, 2019 to June 30, 2022 valuation period revealed a *net* solvency deficit of \$14.1 billion (after allowance for expenses) on solvency liabilities of \$266.5 billion. This represents the total level of under-funding on a solvency basis for the 1,003 DB plans analyzed in the 2022 Report, excluding the Listed JSPPs.

Ontario’s legislation allows certain benefits (e.g., post-retirement indexation, consent benefits, excluded plant closure and excluded permanent layoff benefits) to be excluded in the determination of solvency liabilities. There were 227 plans that excluded one or more of these benefits, resulting in a reduction of liabilities totaling \$51.5 billion. Thus, the total wind up funding shortfall, after making allowances for expenses, is \$65.6 billion (\$14.1 billion plus \$51.5 billion). This measures the funding shortfall of all the plans in the database if they were to have wound up at their last valuation dates. Of course, this only depicts a hypothetical scenario as the majority of pension plans continue operating on a going-concern basis.

4.2 Actuarial Assumptions

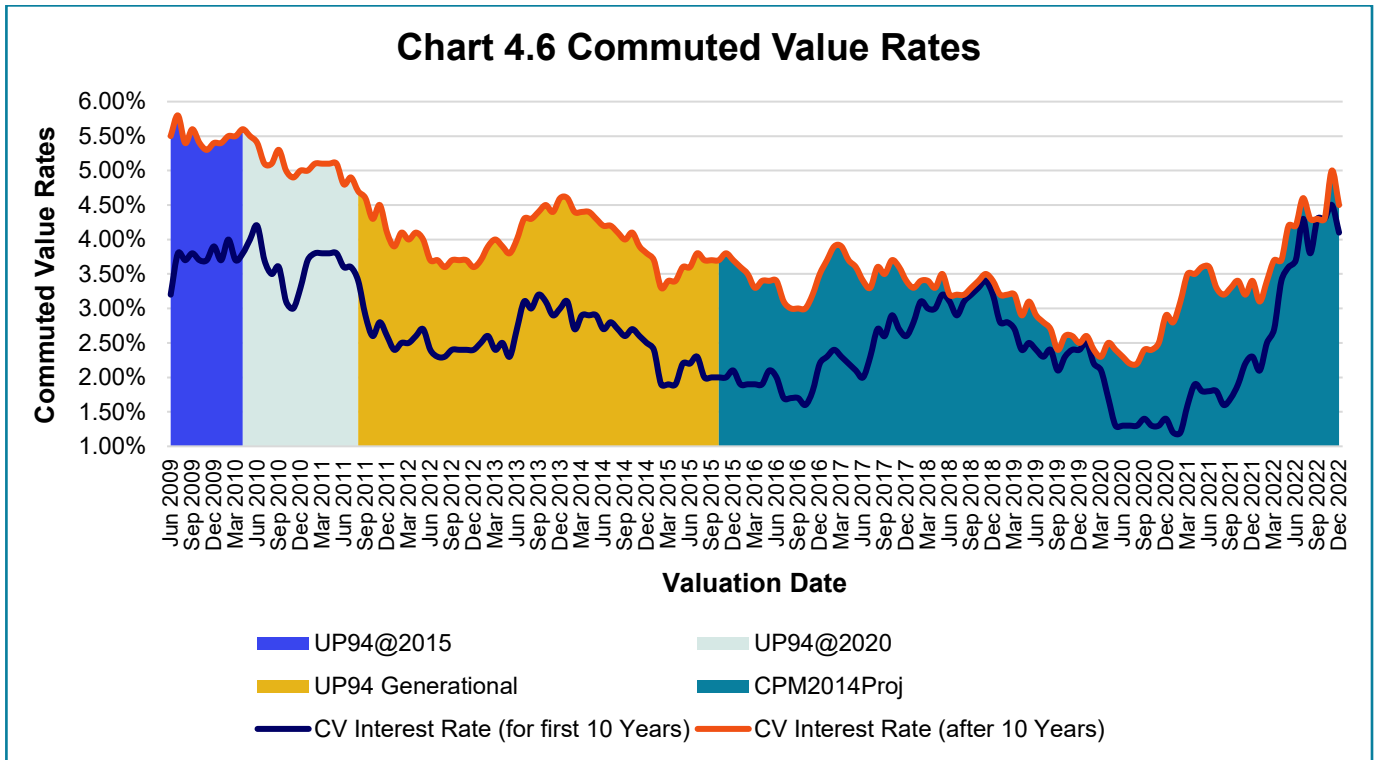
Going-concern interest rate

Chart 4.5 (additional details available in Appendix B) shows the interest rate assumptions used in the going-concern valuations. In our review of the going-concern interest rate assumptions over the past two decades, there has been a very long steady trend of decreasing interest rate assumptions, except for a pause in the 2017/2018 and 2018/2019 valuation periods. As Chart 4.5 shows, the downward trend has been broken again in the 2021/2022 valuation period. Also notable from the chart is the larger proportion of plans using an interest rate below 4% in recent years – this is possibly a reflection of increased use of de-risking strategies by pension plans.



Solvency interest rates

Chart 4.6 graphs the non-indexed commuted value and mortality basis over the period shown based on the CIA Standards of Practice for Pension Plans applicable as of the valuation date.

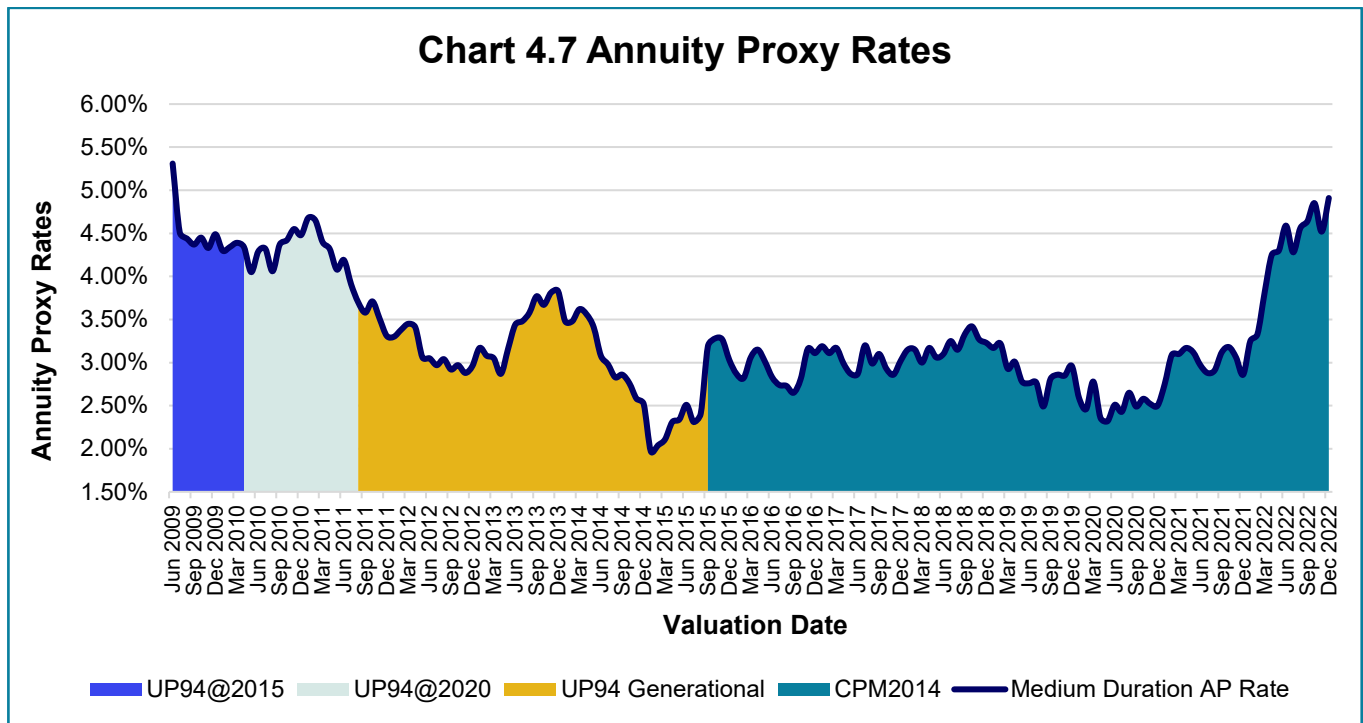


The CIA periodically updates its Guidance to actuaries for estimating the cost of purchasing a group annuity for Hypothetical Wind up and Solvency Valuations. An [Educational Note](#) was issued on March 23, 2023 from the Committee on Pension Plan Financial Reporting (PPFRC) that was applicable for valuation dates between December 31, 2022 and June 29, 2024. The Guidance concluded that for valuations within this period, an appropriate discount rate for estimating the cost of purchasing a non-indexed group annuity, prior to any adjustment for sub- or super-standard mortality, would be determined based on the interpolation method, applicable durations and spreads outlined below:

Illustrative Block	Duration	Spread above unadjusted CANSIM V39062
Low Duration	7.7	160 bps
Medium Duration	9.7	160 bps
High Duration	11.7	160 bps

It should be noted that the 2022 Report does not reflect any updated guidance that may be issued by the PPFRC after March 23, 2023. Historically, any such guidance would not affect calculations up to December 31, 2022, the end date of the period covered by the 2022 Report.

Chart 4.7 graphs the non-indexed interest rates for annuity purchases since 2009 as set out in the historical CIA Guidance. The chart shows estimated interest rates based on liabilities with a medium duration, where applicable.



As the above charts demonstrate, there was a sharp spike up in solvency interest rates in 2022. It remains to be seen whether these higher rates will persist, and if so, for how long.

5.0 Investment

The plans included in the investment data analysis are a subset of the 1,012 plans identified in Section 2 of this 2022 Report. This subset consists of plans that have filed an Investment Information Summary (IIS) for the most recent 2022 monitoring cycle (fiscal year-ends between July 1, 2021 and June 30, 2022). In the vast majority of cases (over 90%), the IIS reporting relates to the calendar year 2021. There are 994 plans included in the investment data analysis, representing 98% of the plans included in the funding data analysis.⁴ This number includes the 9 Listed JSPPs. For hybrid plans, only the DB assets are included in the data.

5.1 Summary of Pension Fund Profiles and Performance

The asset mix of the 994 plans for the most recent monitoring cycle and their performance are summarized in Table 5.1 and depicted in Chart 5.2, Chart 5.3 and Chart 5.4.

In the Asset Mix section, the weight of each asset class is shown for all plans in each subgroup and for all plans as a whole.

In the Performance section, all performance numbers are determined at the individual plan level. “Average Return” means the average gross rate of return and “Average Investment Fees” means the average expenses paid from the pension plan related to managing the pension plan’s investments, expressed as a percentage of average assets during the reporting year.

⁴ Plans not included here are primarily plans with outstanding IIS filings.

Table 5.1 – Investment Profile of All Plans

	SEPP		MEPP		Listed JSP	
Number of Plans	919		66		9	
Asset Mix	Market Value (in Millions)	% of Total Investments	Market Value (in Millions)	% of Total Investments	Market Value (in Millions)	% of Total Investments
Cash and Short-Term Investments	\$7,037	3.4%	\$1,209	2.5%	\$58,045	10.0%
Bond	\$89,973	43.7%	\$14,008	28.5%	\$160,113	27.5%
Equity	\$69,490	33.7%	\$22,672	46.1%	\$91,890	15.8%
Real Estate	\$18,493	9.0%	\$7,551	15.3%	\$51,025	8.8%
Alternative Investments ⁵	\$21,099	10.2%	\$3,734	7.6%	\$220,243	37.9%
Total	\$206,092	100.0%	\$49,174	100.0%	\$581,316	100.0%
Performance	SEPP		MEPP		Listed JSP	
Average Gross Return ⁶	6.88%		14.16%		12.63%	
Average Investment Fees	0.35%		0.44%		0.48%	
Average Admin Fees	0.53%		0.38%		0.22%	
Average Total Fees	0.88%		0.82%		0.70%	

⁵ Alternative Investments include hedge funds, private equity, infrastructure, currency hedging, resource properties, commodities, etc.

⁶ The average return in this table and other tables in this section are the arithmetic (equally-weighted) average of investment returns of the pension funds in each subgroup. The average of investment returns weighted by the sizes of all 994 pension funds is 10.54%, compared to 7.42% on an equally-weighted basis.

Chart 5.2: Asset Allocation of SEPPs

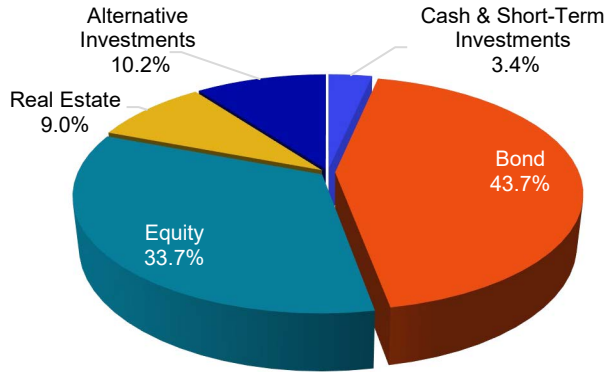


Chart 5.3: Asset Allocation of MEPPs

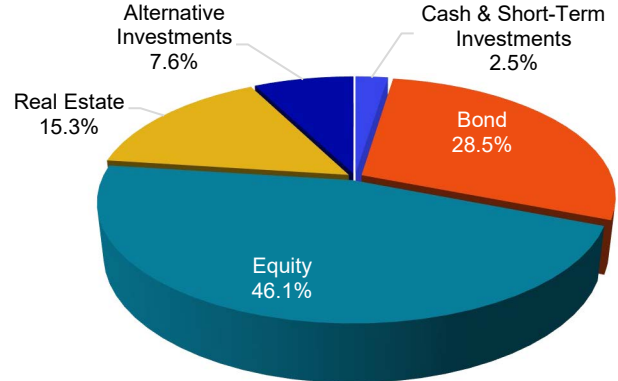
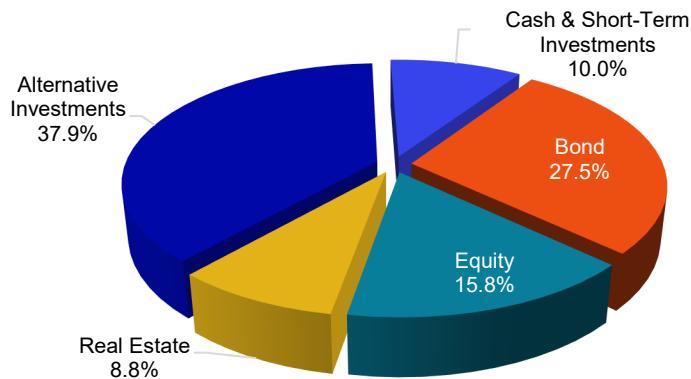


Chart 5.4: Asset Allocation of Listed JSPPs



On a broad basis, traditional fixed income assets (consisting of cash, short-term investments and bonds) constitute 47% of total investments for the SEPPs. Non-fixed income assets (consisting of equity, real estate and alternative investments) constitute 53% of total investments, although we note that the nature of alternative investments means that they cannot always be classified as purely fixed or non-fixed income.

By comparison, the MEPPs and the 9 Listed JSPPs (which are mostly large public sector plans) have a very different aggregate asset mix. The MEPPs have a much lower allocation to traditional fixed income assets and the Listed JSPPs exhibit a higher percentage of alternative investments and lower proportion of equity investments. The proportion of alternative investments for Listed JSPPs has continued to increase and it is now almost double what it was five years ago; a corresponding reduction has occurred in the allocation to bonds.

Table 5.5 – Performance Result Percentiles by Plan Type

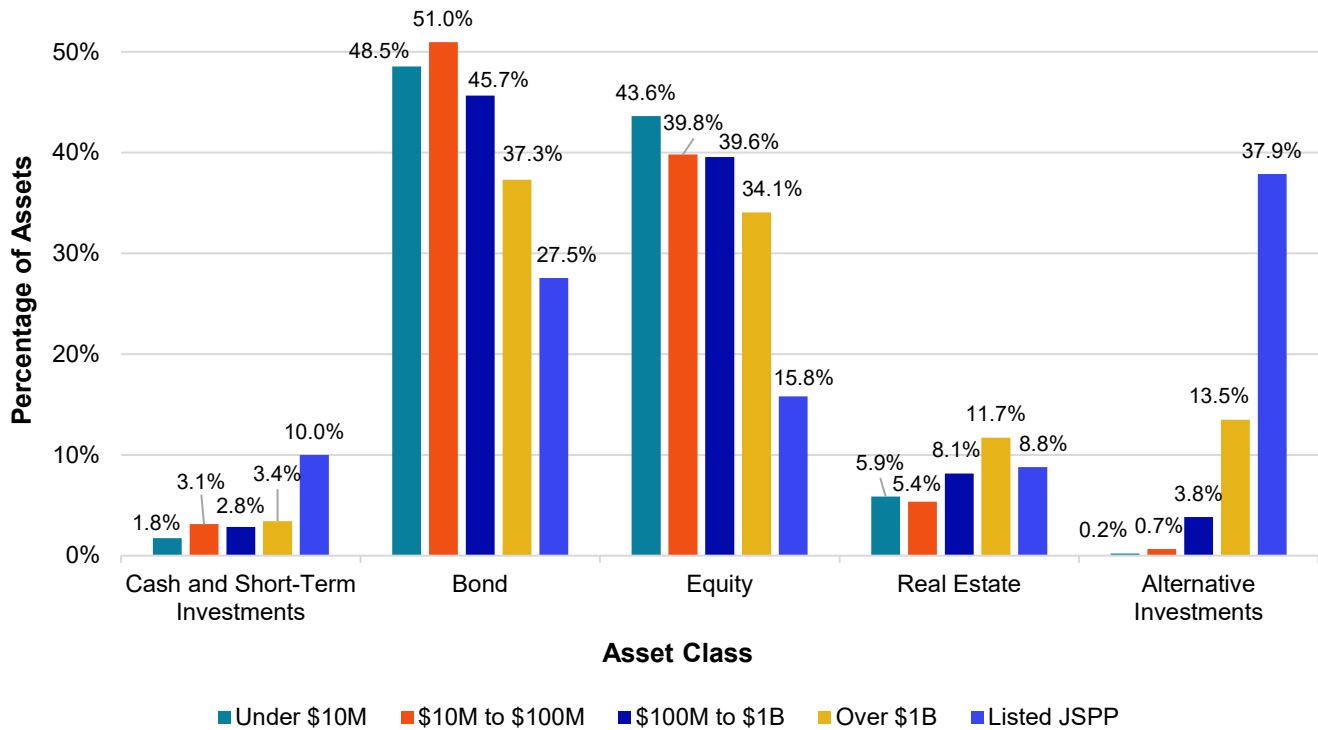
Plan Type	SEPP	MEPP	Listed JSP	All Plans
# of Plans	919	66	9	994
Gross Investment Returns				
90 th Percentile	14.49%	18.16%	15.12%	15.29%
75 th Percentile	11.92%	16.35%	14.72%	12.46%
Median	7.46%	13.53%	12.13%	8.08%
25 th Percentile	1.83%	11.15%	11.41%	2.29%
10 th Percentile	-2.08%	9.95%	9.52%	-1.75%
Investment Fees				
90 th Percentile	0.74%	0.70%	0.71%	0.74%
75 th Percentile	0.50%	0.53%	0.61%	0.51%
Median	0.30%	0.44%	0.49%	0.32%
25 th Percentile	0.12%	0.31%	0.29%	0.14%
10 th Percentile	0.00%	0.20%	0.25%	0.00%
Administrative Fees				
90 th Percentile	1.01%	0.59%	0.39%	0.99%
75 th Percentile	0.52%	0.35%	0.36%	0.51%
Median	0.27%	0.23%	0.15%	0.26%
25 th Percentile	0.08%	0.14%	0.10%	0.09%
10 th Percentile	0.00%	0.07%	0.08%	0.00%
Total Fees				
90 th Percentile	1.52%	1.16%	1.11%	1.50%
75 th Percentile	0.98%	0.83%	0.89%	0.98%
Median	0.62%	0.68%	0.60%	0.63%
25 th Percentile	0.40%	0.52%	0.44%	0.41%
10 th Percentile	0.20%	0.38%	0.36%	0.21%

Allocations to various asset classes vary among pension plans, based on the total value of their assets. Generally, the larger the pension fund, the higher the allocations to real estate and alternative investments and the less to bond and equity. This difference is especially noticeable when comparing pension funds with over \$1 billion in assets to those that are smaller. The asset allocation of all plans, and performance, by asset size is shown in Table 5.6 and depicted in Chart 5.7.

Table 5.6 – Asset Allocation of All Plans by Asset Size

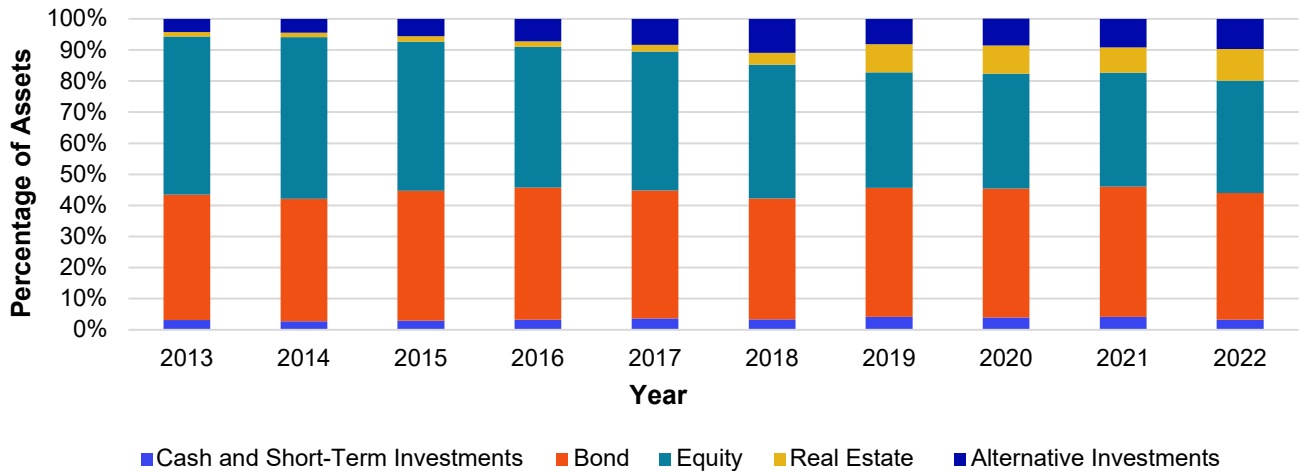
Size of Plan Assets	Under \$10M	\$10M to \$100M	\$100M to \$1B	Over \$1B	Listed JSP	All Plans
# of Plans	239	464	235	47	9	994
Cash and Short-Term Investments	1.8%	3.1%	2.8%	3.4%	10.0%	7.9%
Bond	48.5%	51.0%	45.7%	37.3%	27.5%	31.6%
Equity	43.6%	39.8%	39.6%	34.1%	15.8%	22.0%
Real Estate	5.9%	5.4%	8.1%	11.7%	8.8%	9.2%
Alternative Investments	0.2%	0.7%	3.8%	13.5%	37.9%	29.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Performance						
Average Gross Return	8.03%	7.25%	6.99%	7.12%	12.63%	7.42%
Average Investment Fees	0.51%	0.32%	0.28%	0.31%	0.48%	0.36%
Average Admin Fees	1.09%	0.42%	0.21%	0.12%	0.22%	0.52%
Average Total Fees	1.60%	0.75%	0.49%	0.43%	0.70%	0.88%

Chart 5.7 - Asset Allocation of All Plans by Asset Size



Investment data reported in previous annual reports on the funding and investment of DB pension plans in Ontario from 2013 to 2022 monitoring cycles (each starting at July 1st the previous year) demonstrates a general decreasing trend in pension fund asset allocation in equity, decreasing from 50.8% in 2013 to 36.1% in 2022. Real estate investments experience significant growth, peaking at 10.2% in 2022. Alternative investments also show a steady rise, reaching 9.7% in 2022. Despite minor fluctuations, the allocation to bonds remains relatively stable, accounting for 40.7% of total investments in 2022. The asset allocation of all plans (other than the Listed JSPPs) over this period is shown in Chart 5.8 (additional details available in Appendix B).

**Chart 5.8 - Asset Allocation of All Plans (Other than Listed JSPPs)
from 2013 to 2022**



**Chart 5.9 - Average Investment Returns (Net of Investment Fees)
SEPP and MEPP (2013-2022)**



5.2 Additional Information

This section provides additional fund performance information, for plans other than Listed JSPPs, based on a plan's percentage of funds invested in pooled funds.

By percentages invested in pooled funds (for plans other than Listed JSPPs)

Table 5.10 – Investment Results by Percentage Invested in Pooled Funds

% Invested in Pooled Funds		Plan Size			
		Under \$10M	\$10M to \$100M	\$100M to \$1B	Over \$1B
<20%	Number of plans	12	38	36	15
	Average Gross Return	8.42%	6.40%	5.86%	6.88%
	Average Investment Fees	0.35%	0.22%	0.29%	0.23%
20% - 80%	Number of plans	12	35	50	22
	Average Gross Return	11.46%	8.85%	7.15%	9.60%
	Average Investment Fees	0.40%	0.27%	0.26%	0.38%
>80%	Number of plans	215	391	149	10
	Average Gross Return	7.82%	7.19%	7.20%	2.00%
	Average Investment Fees	0.53%	0.34%	0.29%	0.28%
Total	Number of plans	239	464	235	47
	Average Gross Return	8.03%	7.25%	6.99%	7.12%
	Average Investment Fees	0.51%	0.32%	0.28%	0.31%

Allocation to pooled funds decreases with size of the plan. In general, pooled funds allow investors to access a diversified portfolio managed by professional fund managers. By investing in pooled funds, investors can potentially benefit from economies of scale, professional expertise, and broader market exposure. This explains why the majority of smaller-sized plans (almost 90%) invested more than 80% in pooled funds.

6.0 Baseline Projections

This section estimates annual funding contributions and funded positions of all plans to December 31, 2022 to facilitate continued monitoring and trend analysis.

6.1 Estimated DB Funding Contributions in 2023

Table 6.1 presents 2023 estimated funding contributions – comprising normal costs and special payments – for DB plans, including hybrid plans with defined benefit provisions. Estimates are based on contribution recommendations set out in the most recently filed plan valuation reports between July 1, 2019 and June 30, 2022.⁷

Table 6.1 – Estimated DB Funding in 2023

	SEPP		MEPP	Listed JSPP	All Plans
	Plans with Solvency Excess	Plans with Solvency Deficit			
Number of Plans	549	387	67	9	1,012
(In Millions)					
Employer Normal Cost Contributions	\$1,360	\$1,035	\$1,844	\$6,445	\$10,684
Member Required Contributions	\$436	\$530	\$163	\$6,045	\$7,174
Sub-total	\$1,796	\$1,565	\$2,007	\$12,490	\$17,858
Special Payments	\$26	\$392	\$159	\$642	\$1,219
Total	\$1,822	\$1,957	\$2,166	\$13,132	\$19,077

Total 2023 DB funding contributions are estimated to be \$19.1 billion of which 6.4% represents special payments of \$1.2 billion. This compares to the total 2022 DB funding contributions estimated in the 2021 Report of \$18.5 billion. The increase of \$621 million consists of increases

⁷ For plans where the AIS reported contributions did not extend to cover 2023, the 2023 estimated contributions were determined assuming contributions would continue at the last available rate.

of \$545 million in employer normal costs and \$405 million in member required contributions and a decrease of \$329 million in special payments.

For plans other than MEPPs and Listed JSPPs, the table also provides a breakdown of estimated funding contributions between plans with a solvency excess and plans with a solvency deficit in the most recently filed report. Special payments of \$26 million represent 1.4% of total contributions for SEPPs with a solvency excess. This compares with special payments of \$392 million, representing about 20.0% of total contributions for SEPPs with solvency deficits.

Estimated 2023 funding contributions are determined after consideration of prior year credit balances or funding excesses, subject to statutory restrictions.

6.2 Projected Financial Position as at December 31, 2022

December 31, 2022 solvency position projection

Table 6.2 presents the distribution of solvency ratios reported in the last filed valuation reports and the distribution of projected solvency ratios (PSRs) derived by projecting DB solvency plan assets and actuarial liabilities to the end of 2022 (with a comparison of PSRs as at December 31, 2021 from the 2021 Report). The projections reflect the impact of investment returns, changes in solvency interest rates and expected funding contributions.

Table 6.2 – Distribution of Solvency Ratios

	Actual as at Last Filed Valuation	Projected Solvency Ratio as at Dec 31, 2022			
		SEPP	MEPP	Listed JSP	All Plans
Median SR	102%	113%	95%	113%	113%
SR < 70%	3%	1%	2%	0%	1%
70% ≤ SR < 85%	4%	1%	28%	0%	3%
85% ≤ SR < 100%	37%	16%	30%	11%	16%
100% ≤ SR	56%	82%	40%	89%	80%

The median projected solvency ratio for all plans has increased to 113% as at December 31, 2022 from 109% as at December 31, 2021. The increase is primarily attributable to:

- A 25% increase due to a significant rise in the solvency valuation interest rates as at December 31, 2022 from their December 31, 2021 levels resulting in a decrease in plan liabilities, as well as estimated contributions made in 2022; mostly offset by
- A 21% decrease due to an estimated median net investment return of -13.8%

December 31, 2022 going-concern position projection

With the enhanced focus on going-concern funded positions of DB plans under the funding regime, FSRA also estimated going-concern funded ratios as at December 31, 2022 to facilitate further proactive tracking in the future. December 31, 2022 going-concern funding ratios were developed by projecting DB going-concern plan assets and actuarial liabilities to the end of 2022 and reflecting actual/estimated investment returns to the end of 2022.

In contrast to the projected solvency ratios, the projected going-concern funded ratios are not based on prescribed interest rates but chosen by the plan actuary in consultation with the plan administrator. Our projection assumes that the going-concern actuarial assumptions, and in particular the interest rate, would remain unchanged from those used in the last filed actuarial valuation report. However, because the going-concern interest rate assumption is not prescribed, more variability is expected in the projected results when compared to actual outcomes.

Table 6.3 – Distribution of Going-concern (GC) Ratios

	Actual as at Last Filed Valuation	Projected GC Ratio as at Dec 31, 2022			
		SEPP	MEPP	Listed JSPP	All Plans
Median GC Ratio	111%	94%	92%	86%	93%
GC Ratio < 70%	1%	3%	1%	0%	2%
70% ≤ GC Ratio < 85%	2%	24%	21%	44%	24%
85% ≤ GC Ratio < 100%	14%	39%	51%	44%	40%
100% ≤ GC Ratio	83%	34%	27%	12%	34%

Please note that the projected going-concern ratios provided above include the PfAD. If the PfADs were excluded, the ratios would be higher.

Methodology and assumptions

Results reported in the most recently filed valuation reports (i.e., assets and liabilities) were projected to December 31, 2022 reflecting estimated investment returns and expected contributions along with the following assumptions:

- Sponsors would use all available funding excess and prior year credit balances for contribution holidays subject to statutory restrictions.
- Sponsors would make all required normal cost contributions and minimum statutory special payments.
- Cash outflows equal to pension amounts payable to retired members as reported in last filed valuation reports were deducted from both plan assets and liabilities. Plan administration costs were indirectly reflected through the use of net after expense investment returns.

Each plan's unique projection period investment returns for 2019, 2020 and 2021 were determined based on its IIS filings.

Table 6.4 – Individual Plan 2019, 2020 and 2021 Rate of Return Statistics

	5 th Percentile	1 st Quartile	2 nd Quartile	3 rd Quartile	95 th Percentile
2021 Gross Return	-3.1%	3.3%	8.3%	12.4%	16.8%
2021 Net After Investment Expense	-3.3%	2.9%	8.0%	12.0%	16.4%
2021 Net After All Expense	-3.7%	2.4%	7.5%	11.5%	16.0%
2020 Gross Return	3.7%	7.9%	9.8%	11.6%	14.9%
2020 Net After Investment Expense	3.2%	7.4%	9.5%	11.4%	14.6%
2020 Net After All Expense	2.7%	6.9%	8.9%	10.9%	14.0%
2019 Gross Return	4.9%	12.7%	14.5%	16.2%	18.9%
2019 Net After Investment Expense	4.8%	12.3%	14.1%	15.8%	18.5%
2019 Net After All Expense	4.3%	11.5%	13.5%	15.2%	17.8%

For 2022, each plan's returns were estimated based on its 2021 IIS asset allocation information in conjunction with 2022 market index returns, offset by a 25 basis point quarterly expense allowance.

Table 6.5 – Estimated Rate of Return Statistics for 2022 based on Market Index Returns

	5 th Percentile	1 st Quartile	2 nd Quartile	3 rd Quartile	95 th Percentile
2022 Gross Return	-16.8%	-14.7%	-12.9%	-12.0%	-9.9%
2022 Net After All Expense	-17.7%	-15.6%	-13.8%	-12.9%	-10.8%

Table 6.6 – 2022 Market Index Returns

	S&P / TSX Total Return Index	MSCI World Total Net Return Index	FTSE TMX Universe Bond Index	FTSE TMX Long Bond Index	Cohen & Steers Global Reality Majors Index
Q4 2022	6.0%	8.2%	0.1%	-1.0%	3.6%
Q3 2022	-1.4%	-0.1%	0.5%	1.5%	-6.4%
Q2 2022	-13.2%	-13.4%	-5.7%	-11.8%	-12.6%
Q1 2022	3.8%	-6.2%	-7.0%	-11.7%	-6.2%

Table 6.7 – Projected Solvency Valuation Bases at December 31, 2021 and 2022:

	Commuted Value Basis	Annuity Purchase Basis
December 31, 2022	Interest: 4.10% for 10 years, 4.50% thereafter Mortality: CPM2014 generational	Interest: 4.91% Mortality: CPM2014 generational
December 31, 2021	Interest: 2.30% for 10 years, 3.40% thereafter Mortality: CPM2014 generational	Interest: 2.86% Mortality: CPM2014 generational

7.0 Glossary

The following terms are explained for the purpose of this report:

Defined Benefit (DB) Pension Plan: In a defined benefit pension plan, the amount of the pension benefit is determined by a defined formula, usually based on years of service. There are several types of defined benefit plans, including:

- Final Average – the benefit is based on the member’s average earnings over the member’s last several years (typically three or five) of employment and years of service.
- Career Average – the benefit is based on the member’s earnings over the member’s entire period of service.
- Flat Benefit – the benefit is based on a fixed dollar amount for each year of service.

Defined Contribution (DC) Pension Plan: In a defined contribution plan, the pension benefit is based solely on the amount of pension that can be provided by the amount contributed to the member’s individual account together with any expenses and investment returns allocated to that account.

Frozen DB Plans: Pension plans in which members have a frozen defined benefit entitlement and do not accrue any future service in that pension plan.

Frozen Hybrid: Pension plans in which members have a frozen defined benefit entitlement but are accruing future defined contribution benefits.

Funding Valuation: This is a valuation of a defined benefit pension plan prepared for funding purposes. Two types of valuations are required by the PBA: a *going-concern* valuation (which assumes the pension plan will continue indefinitely); and a *solvency* valuation (which assumes the plan would be fully wound up as at the effective date of the valuation). Under Ontario’s legislation, a solvency valuation may exclude the value of specified benefits (e.g., indexation, prospective benefit increases, or plant closure/layoff benefits).

Hybrid Pension Plan: A hybrid pension plan contains both defined benefit and defined contribution provisions. A member’s pension benefit may be a combination of the defined benefit plus the defined contribution entitlement or a pension benefit which is the greater of the defined benefit entitlement or the defined contribution entitlement.

Jointly sponsored pension plan (JSPP): A jointly sponsored pension plan is a special type of pension plan in which decision making and contributions are shared by both plan members and their employer(s). A JSPP provides defined benefits to plan members and contributions are always made by both plan members and their employers (this is known as a contributory plan).

Multi-Employer Pension Plan (MEPP): A multi-employer pension plan covers the employees of two or more unrelated employers. These plans may provide defined benefits but, in most MEPPs, the required contributions are negotiated and fixed through collective bargaining.

Single Employer Pension Plan (SEPP): A single employer pension plan is one in which a single employer, or several related employers within a corporate group, participate and contribute to the same pension plan. A SEPP can be provided to all employees, or just certain classes of employees (e.g., all unionized employees). It is usually governed and administered by the plan sponsor without input from plan members.

Appendix A – Additional Information

This appendix provides additional details of the profile of the plans that have been included in the funding data analysis. The data consists of DB pension plans that have filed valuation reports with valuation dates between July 1, 2019 and June 30, 2022. Please refer to Section 2.0 – Funding Data for details of how the data was compiled.

Table A.1 shows a reconciliation of the 1,080 plans analyzed in the 2021 Report to the 1,012 plans analyzed in the 2022 Report and Table A.2 compares the number of plans analyzed in the current report with the plans analyzed in previous reports.

Table A.1 – Reconciliation of Plans from the 2021 Report to the 2022 Report

Plan Type	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSP	Total
2021 Report	286	69	133	326	190	68	8	1,080
New Plans / Spin-Offs	2		1		1		1	5
Change Jurisdiction	(1)		1	1		1		2
Change Designated Plan Status		1			2			3
Asset Transfer	(8)	(3)	(2)	(5)	(2)	(2)		(22)
Conversion From DB to DC				(1)	(2)			(3)
Wind Up	(10)	(5)	(6)	(16)	(17)			(54)
Data Correction					1			1
2022 Report	269	62	127	305	173	67	9	1,012

Table A.2 – Plans Included in Current and Previous Reports by Plan/Benefit Type

Year	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSP	Total	Total Membership
2022	269	62	127	305	173	67	9	1,012	3,437,906
2021	286	69	133	326	190	68	8	1,080	3,382,291
2020	304	83	138	343	205	69	7	1,149	3,367,124
2019	324	88	143	359	236	73	7	1,230	3,338,522
2018	354	94	157	384	295	73	7	1,364	3,377,627
2017	356	95	162	385	306	74	0	1,378	1,870,615
2016	352	94	166	384	264	73	0	1,333	1,866,565
2015	366	104	174	397	170	72	0	1,283	1,835,156
2014	384	112	188	386	168	73	0	1,311	1,833,773
2013	425	132	202	391	135	76	0	1,361	1,860,156
2012	455	140	216	387	113	76	0	1,387	1,832,800
2011	491	152	234	381	110	70	0	1,438	1,828,604
2010	548	172	262	371	83	70	0	1,506	1,866,444
2009	640	197	322	310	n/a	70	0	1,539	1,899,155
2008	619	220	338	315	n/a	72	0	1,564	1,867,653

Table A.3 shows a breakdown of the number of plans by size of plan membership and Table A.4 shows a breakdown of the total members covered by size of plan membership.

Table A.3 – Number of Plans by Size of Membership in Plan

Number of Members in Plan	SEPP	MEPP	Listed JSPP	Total
0 – 49	200	0	0	200
50 – 99	139	1	0	140
100 – 249	217	3	0	220
250 – 499	139	0	0	139
500 – 999	101	11	1	113
1,000 – 4,999	110	24	0	134
5,000 – 9,999	22	9	0	31
10,000 +	8	19	8	35
Total	936	67	9	1,012

Table A.4 – Total Membership by Size of Membership in Plan

Number of Members in Plan	SEPP	MEPP	Listed JSP	Total
0 – 49	4,729	0	0	4,729
50 – 99	10,389	60	0	10,449
100 – 249	35,353	521	0	35,874
250 – 499	48,888	0	0	48,888
500 – 999	71,648	8,520	630	80,798
1,000 – 4,999	228,977	56,890	0	285,867
5,000 – 9,999	156,235	65,813	0	222,048
10,000 +	221,476	916,833	1,610,944	2,749,253
Total	777,695	1,048,637	1,611,574	3,437,906

Appendix B – Supplementary Tables

This appendix provides supplementary data to what is presented in some of the charts in the main body of the report. Starting from this 2022 Report, these tables were relocated to this appendix to enhance the report’s flow, maintain a concise presentation of key findings, and offer a focused narrative within the body of the report. The inclusion of these tables augments the charts and provides continuity with previous reports to users who may be interested in the additional data.

The following table, Table 2.8, corresponds to the data presented in Chart 2.8 in the main body of the report. It provides a breakdown of plans and going-concern assets by asset valuation method.

Table 2.8 – Asset Valuation Method

Asset Valuation Method	# of Plans	% of Plans	% of Total Going-Concern Assets
Market	813	80.3%	13.9%
Smoothed Market	198	19.6%	86.0%
Other	1	0.1%	0.1%
Total	1,012	100.0%	100.0%

Table 4.1 corresponds to the data presented in Chart 4.1. It provides a breakdown of plans by solvency ratios for the past four annual valuation periods beginning on July 1 from 2018 to 2021⁸.

Table 4.1 – Breakdown of Plans (Other than Listed JSPPs) by Solvency Ratios

Solvency Ratio (SR)	July 1, 2018 to June 30, 2019		July 1, 2019 to June 30 2020		July 1, 2020 to June 30 2021		July 1, 2021 to June 30, 2022	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
SR < 0.60	15	4.6%	21	3.4%	15	3.9%	6	1.2%
0.60 ≤ SR < 0.80	56	17.3%	66	10.6%	54	13.8%	37	7.7%
0.80 ≤ SR < 0.85	23	7.1%	24	3.8%	29	7.5%	14	2.9%
Sub-Total < 0.85	94	29.0%	111	17.8%	98	25.2%	57	11.8%
0.85 ≤ SR < 0.90	36	11.1%	101	16.1%	47	12.1%	21	4.4%
0.90 ≤ SR < 1.00	94	29.0%	177	28.3%	84	21.6%	105	21.8%
Sub-Total < 1.00	224	69.1%	389	62.2%	229	58.9%	183	38.0%
1.00 ≤ SR < 1.20	76	23.5%	205	32.8%	128	32.9%	215	44.6%
SR ≥ 1.20	24	7.4%	31	5.0%	32	8.2%	84	17.4%
Total	324	100.0%	625	100.0%	389	100.0%	482	100.0%
Median Ratio	0.93		0.95		0.96		1.04	

⁸The number of plans for 2018-2021 inclusive may differ from those reported in the 2021 Report due to a variety of reasons including reports filed after last year's cut-off date of Dec. 31, 2021, plans that have been wound up, converted to a DC arrangement, plans that filed a late report or have had their registration moved out of the province.

Table 4.5 presents the corresponding data for Chart 4.5, providing detailed interest rate assumptions used in the going-concern valuations.

Table 4.5 – Going-Concern Interest Rate Assumption by Valuation Period

Rate (%)	July 1, 2018 to June 30, 2019		July 1, 2019 to June 30, 2020		July 1, 2020 to June 30, 2021		July 1, 2021 to June 30, 2022	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
Rate < 4.00	48	14.5%	118	18.6%	137	34.5%	142	28.8%
4.00 ≤ Rate < 4.50	25	7.6%	85	13.4%	45	11.3%	55	11.2%
4.50 ≤ Rate < 5.00	47	14.2%	103	16.3%	72	18.1%	85	17.3%
5.00 ≤ Rate < 5.50	76	23.0%	164	25.9%	85	21.4%	102	20.7%
5.50 ≤ Rate < 6.00	85	25.6%	114	18.0%	42	10.6%	79	16.1%
6.00 ≤ Rate < 6.50	45	13.6%	41	6.5%	13	3.3%	25	5.1%
Rate ≥ 6.50	5	1.5%	8	1.3%	3	0.8%	4	0.8%
Total	331	100.0%	633	100.0%	397	100.0%	492	100.0%
Average (%)	5.05%		4.76%		4.27%		4.53%	

Table 5.8 corresponds to the data presented in Chart 5.8, providing the asset allocation of all plans (other than the Listed JSPPs) over the last 10 years.

Table 5.8 – Asset Allocation of All Plans (Other than Listed JSPPs) from 2013 to 2022

Asset Class	% of Total Investments									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Cash and Short-Term Investments	3.1%	2.7%	2.9%	3.3%	3.7%	3.4%	4.2%	3.9%	4.2%	3.3%
Bond	40.4%	39.4%	41.8%	42.4%	41.1%	38.9%	41.4%	41.5%	41.9%	40.7%
Equity	50.8%	52.0%	48.0%	45.3%	44.7%	43.0%	37.2%	36.9%	36.6%	36.1%
Real Estate	1.5%	1.5%	1.7%	1.8%	2.1%	3.8%	9.0%	9.1%	8.1%	10.2%
Alternative Investments	4.2%	4.4%	5.6%	7.2%	8.4%	10.9%	8.2%	8.6%	9.2%	9.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%