FSRA
Financial Services Regulatory Authority of Ontario

Ontario

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2021 Report on the Funding of Defined Benefit Pension Plans in Ontario

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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 prepared this report (2021 Report) to provide pension stakeholders with up-to-date funding, investment and actuarial information related to defined benefit (DB) pension plans in Ontario. Information in this report is based on the latest filed valuation reports for DB pension plans that have valuation dates between July 1, 2018 and June 30, 2021, and fund financial statements for the fiscal year ending between July 1, 2020 and June 30, 2021. Information is presented on an aggregate basis with no disclosure of plan-specific information.

Note that because the 2021 Report is based on factual information from valuation reports filed with valuation dates up to June 30, 2021, the impact of more recent events, such as the high inflation environment, the Russia/ Ukraine conflict, new developments in the COVID-19 pandemic, etc. are 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 the first 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 info 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.

Temporary funding relief during COVID-19 pandemic

On September 21, 2020, Regulation 909 under the PBA was amended to provide temporary funding relief to employers during the COVID-19 pandemic that was declared in March 2020. The Regulation permitted eligible employers to elect to defer up to six months of contributions to their plans.

No employers sought this temporary funding relief during the pandemic.

1.3 Key Findings

The 2021 Report's key findings summarized below are based on actual information from actuarial valuation reports filed with FSRA with valuation dates between July 1, 2018 and June 30, 2021. 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, 2021 in the key findings below.

In addition to the plans described above, there are approximately 230 pension plans registered outside of Ontario that have 55,000 Ontario beneficiaries – these plans do not file actuarial valuation reports with FSRA and are not included in the 2021 Report.

General funded status

1. The number of pension plans continues to trend lower, with a reduction of 69 single employer pension plans (SEPPs) and 1 multi-employer pension plan (MEPPs) compared to the 2020 Report on the Funding of Defined Benefit Pension Plans in Ontario (2020 Report), primarily as a result of windups and asset transfer transactions. There was one new Listed JSPP. The distribution of the 1,080 pension plans analyzed based on their most recently filed valuation report are as follows:

	July 1, 2018 - June 30, 2019	July 1, 2019 - June 30, 2020	July 1, 2020 - June 30, 2021	Total
Number of Plans	180	520	380	1,080
Percentage of Plans	17%	48%	35%	100%

2. Overall, compared to the 2020 Report, the funded position of the pension plans analyzed by FSRA is essentially unchanged, deteriorating slightly on a going-concern basis and improving slightly on a solvency basis:

	2021 Report	2020 Report
Going-concern Basis		
Median funded ratio	108%	109%
Percentage of plans fully funded	76%	78%
Solvency Basis		
Median funded ratio	97%	96%
Percentage of plans fully funded	41%	38%

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, 2021 (refer to Section 6). The estimated median going-concern funded ratio has improved to 116% at December 31, 2021 from 114% at December 31, 2020. MEPPs and Listed JSPPs have more substantial improvements since last year.

4. In the trend analysis (refer to Section 4), the average interest rate assumption used for going-concern valuations decreased from 5.09% to 4.20% over the four-year period from July 1, 2017 to June 30, 2021. The decline in going-concern interest rates accelerates towards the end of the four-year period. Looking only at valuation dates between July 1, 2020 and June 30, 2021, only 4% of plans used an interest rate of 6.00% or higher and 37% used an interest rate below 4.00% (compared to 8% and 19% respectively for those reports with valuation dates between July 1, 2019 and June 30, 2020).

   The decline in going-concern interest rate assumptions could be due to plan sponsors adopting de-risking and investment strategies that lower the long-term expected rate of return of plan assets.

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. 1,010 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 778 and 232 respectively. The median PfAD for all 1,010 plans is 9.6%.

7. Minimum required contributions for 2022 including employer normal cost contributions, member required contributions and special payments, are estimated to increase by about 1% from the 2021 level ($18.5 billion compared to the estimated $18.2 billion for 2021). This consists of increases of $195 million in employer normal costs, $161 million in member required contributions, and a decrease of $146 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, 2021. The median projected solvency ratio is 109% as at December 31, 2021, compared to 96% as at December 31, 2020. Specifically,

- 76% of the plans had a projected solvency ratio greater than 100% (up from the projected 41% as at December 31, 2020).
- 19% of the plans had a projected solvency ratio between 85% and 100%.
- 5% of the plans had a projected solvency ratio below 85% (down from the projected 20% as at December 31, 2020).

The significant improvement in the projected solvency status was due to increase in solvency valuation discount rates and favourable investment returns on plan assets.

The key remaining transitional solvency funding relief measure is for SOMEPPs. Of the 68 MEPPs that contain a DB provision, 59 have elected to be treated as a SOMEPP. These SOMEPPs represent 97% of the total plan membership covered by the 68 MEPPs.

Fund investment

1. The typical asset allocation of pension funds between fixed income and non-fixed income did not change significantly for SEPPs and MEPPs. However, Listed JSPPs saw a reduction to their fixed income allocation by 6.0% and an increase to their cash and alternative investments by 3.6% and 2.6% respectively.

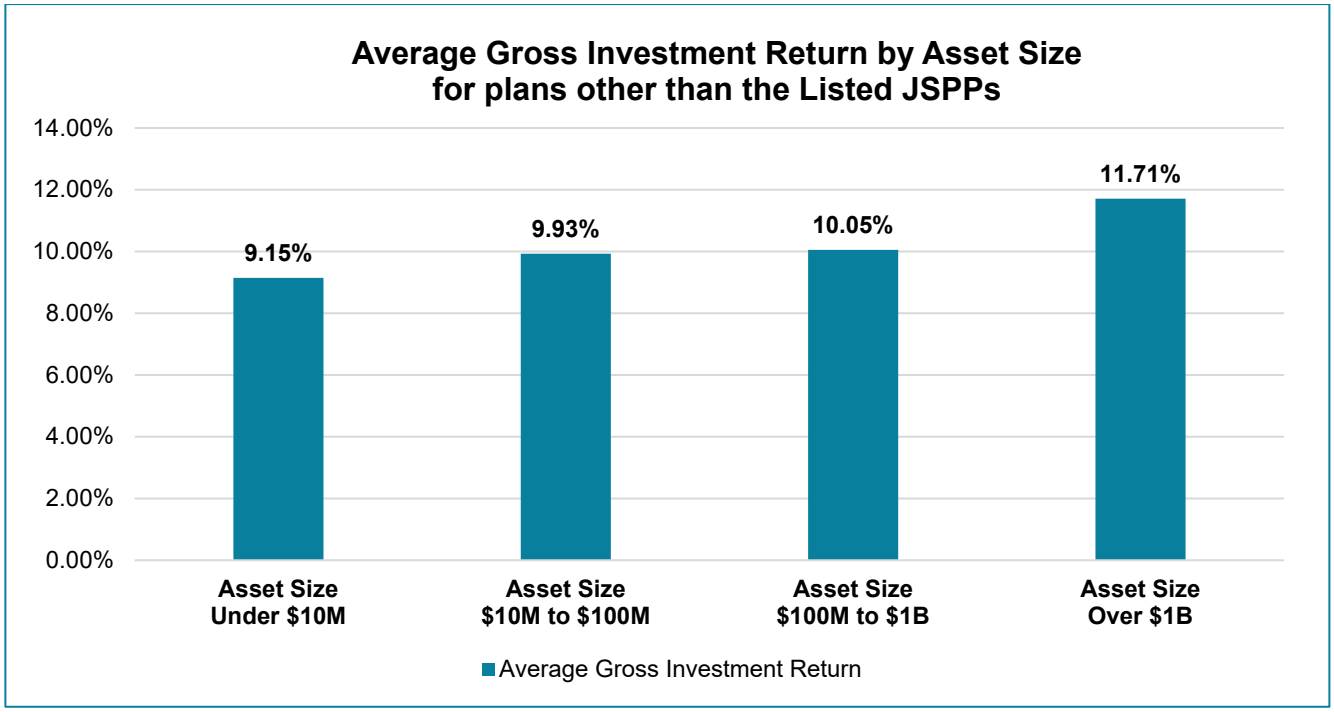
   a. SEPPs and Listed JSPPs have more allocation to cash and fixed income assets (average of 47% vs. 34% for the MEPPs).

   b. Listed JSPP have substantially less allocation to public equities (average of 15% vs. 35% for the SEPPs and 46% for the MEPPs).

   c. Listed JSPPs have substantially higher allocations to alternative investments (average of 31% vs average of 9% for SEPP and MEPPs).

   d. Listed JSPPs hold significantly higher levels of cash (average of 10.5% vs 4.4% for SEPPs and 2.9% for MEPPs).

2. Larger plans generally have higher investment returns and lower reported investment fees than smaller plans. Average gross investment return for plans (other than the Listed JSPPs) that have assets of less than $10 million is 9.15% vs. 11.71% for those with assets of over $1 billion.



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

	SEPP	MEPP	Listed JSPP
Average Gross Return	10.00%	7.38%	7.64%
Average Investment Fees	0.35%	0.41%	0.34%
Average Administrative Fees	0.51%	0.42%	0.16%
Average Total Fees	0.87%	0.83%	0.51%

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, 2018 and June 30, 2021. The data was compiled from the AIS and actuarial valuation reports that FSRA received on or before the data cutoff date of December 31, 2021.

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 filing 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 2021 Report is based on data from each plan's most recently filed actuarial valuation report in order to avoid double counting.[1]

For the purposes of this 2021 Report, the following plans are excluded in order to focus on the plans that are of most interest to our 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.

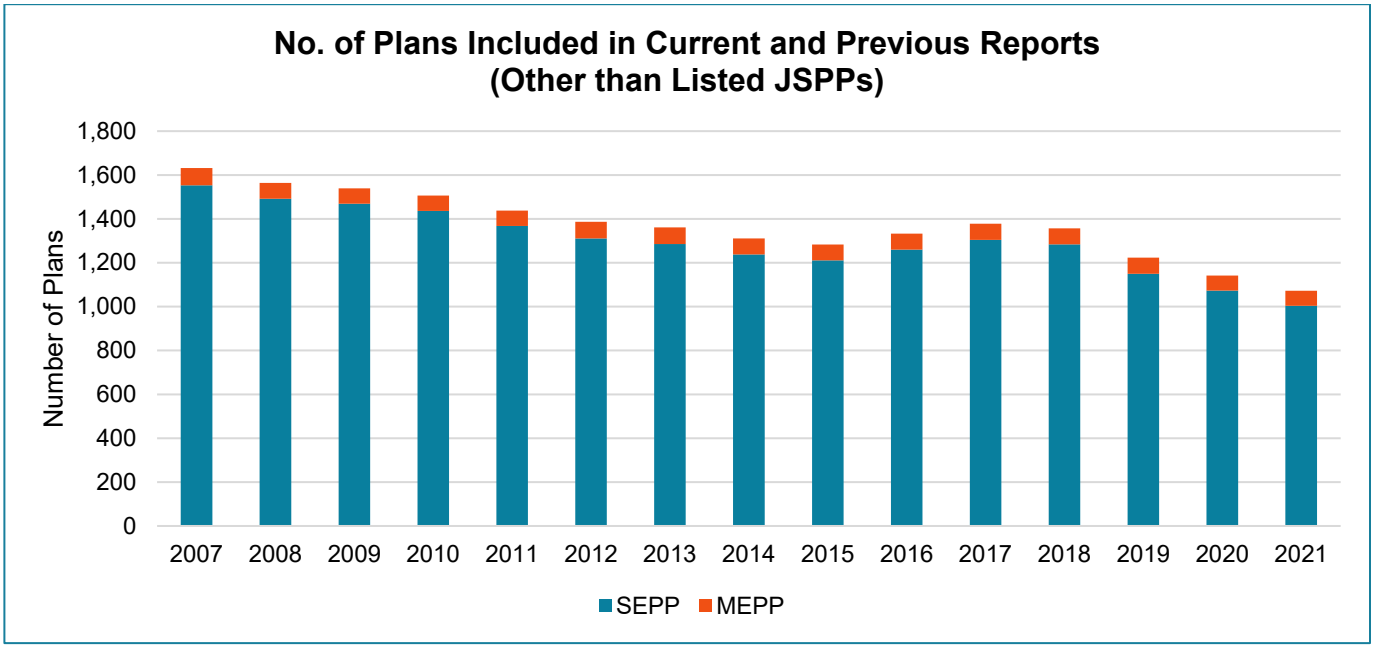


Table 2.1 presents the profile of the 1,080 pension plans that have been included in the funding data analysis in this 2021 Report. Additional details on these plans are included in Section 8.0.

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	286	128,380	121,275	38,368	288,023	$90,012
Career Average	69	24,185	15,584	8,414	48,183	$8,820
Flat Benefit	133	18,628	17,810	9,189	45,627	$7,001
Hybrid	326	125,543	197,825	73,268	396,636	$85,375
Frozen DB & Hybrid	190	13,503	33,781	17,249	64,533	$11,803
MEPP	68	407,097	147,580	465,447	1,020,124	$42,233
Listed JSPP	8	826,265	523,307	169,593	1,519,165	$479,631
Total	**1,080**	**1,543,601**	**1,057,162**	**781,528**	**3,382,291**	**$724,874**
Average Age		**49.1**	**72.2**	**51.4**		

The total membership for MEPPs and Listed JSPPs have increased by 1.2% and 3.7% respectively compared to the 2020 Report. In terms of the asset size, MEPPs have increased by 4.6% and JSPPs have increased by 6.1%. In contrast, the size of the SEPPs has reduced by 5.6% and 1.3% in terms of total membership and market value of assets respectively.

2.1 Summary of Funding Data

Of the 1,080 plans that were analyzed, which together cover 3,382,291 plan members, 262 plans (24%) were less than fully funded on a going-concern basis. These 262 underfunded plans cover 1,365,809 (40%) of the total plan members.

On a solvency basis, 635 plans (59%) of the 1,080 plans were less than fully funded. These 635 plans cover 2,250,770 plan members (67% 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	286	70	24%	288,023	134,889	47%
Career Average	69	22	32%	48,183	28,806	60%
Flat Benefit	133	20	15%	45,627	4,753	10%
Hybrid	326	75	23%	396,636	80,753	20%
Frozen DB & Hybrid	190	54	28%	64,533	18,890	29%
MEPP	68	17	25%	1,020,124	538,409	53%
Listed JSPP	8	4	50%	1,519,165	559,309	37%
Total	**1,080**	**262**	**24%**	**3,382,291**	**1,365,809**	**40%**

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	286	172	60%	288,023	214,248	74%
Career Average	69	54	78%	48,183	38,532	80%
Flat Benefit	133	81	61%	45,627	23,834	52%
Hybrid	326	183	56%	396,636	227,800	57%
Frozen DB & Hybrid	190	78	41%	64,533	28,366	44%
MEPP	68	61	90%	1,020,124	994,783	98%
Sub-Total	**1,072**	**629**	**59%**	**1,863,126**	**1,527,563**	**82%**
Listed JSPP	8	6	75%	1,519,165	723,207	48%
Total	**1,080**	**635**	**59%**	**3,382,291**	**2,250,770**	**67%**

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%	143	188,873	13,424	16,246	83%	5.4 : 1
25%≤ ratio <50%	423	1,118,456	86,430	113,486	76%	2.3 : 1
50%≤ ratio <75%	353	448,049	117,276	123,733	95%	0.6 : 1
75% and over	153	107,748	27,597	26,748	103%	0.1 : 1
Sub-Total	**1,072**	**1,863,126**	**244,727**	**280,213**	**87%**	**1.3 : 1**
Listed JSPP	8	1,519,165	478,888	450,457	106%	1.6 : 1
Total	**1,080**	**3,382,291**	**723,615**	**730,670**	**99%**	**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 108% on a going-concern basis and 97% on a solvency basis. For the 68 MEPPs, 53 of them (only one of which is not a 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	1	1	0	0	0	3
0.60 ≤ GCR < 0.80	2	1	2	5	5	1	0	16
0.80 ≤ GCR < 0.90	17	5	4	14	11	2	0	53
0.90 ≤ GCR < 1.00	51	15	13	55	38	14	4	190
1.00 ≤ GCR < 1.20	162	32	64	168	90	41	4	561
1.20 ≤ GCR	54	15	49	83	46	10	0	257
Total	**286**	**69**	**133**	**326**	**190**	**68**	**8**	**1,080**
Median Ratio	**1.06**	**1.08**	**1.16**	**1.08**	**1.08**	**1.06**	**1.00**	**1.08**

Table 2.6 – Solvency Funded Ratio (SR)

Ratio (SR)	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Sub-Total	Listed JSPP	All Plans
SR < 0.60	0	1	2	2	0	22	**27**	0	**27**
0.60 ≤ SR < 0.80	14	11	7	11	4	27	**74**	3	**77**
0.80 ≤ SR < 0.85	10	2	5	11	5	5	**38**	1	**39**
0.85 ≤ SR < 0.90	61	15	30	49	19	2	**176**	0	**176**
0.90 ≤ SR < 1.00	87	25	37	110	50	5	**314**	2	**316**
1.00 ≤ SR < 1.20	95	12	43	116	80	4	**350**	1	**351**
1.20 ≤ SR	19	3	9	27	32	3	**93**	1	**94**
Total	**286**	**69**	**133**	**326**	**190**	**68**	**1,072**	**8**	**1,080**
Median Ratio	**0.96**	**0.92**	**0.96**	**0.98**	**1.03**	**0.72**	**0.97**	**0.89**	**0.97**

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.

Table 2.7 – Liability Valuation Method

Liability Valuation Method	# of Plans	% of Plans
Unit Credit (with salary projection)	668	61.8%
Unit Credit (with no salary projection)	406	37.6%
Entry Age Normal	1	0.1%
Aggregate	5	0.5%
Total	**1,080**	**100.0%**

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 87% of the total going-concern assets. Notably, all of the Listed JSPPs use smoothed assets, and they alone account for 68% of the total going-concern assets.

Table 2.8 – Asset Valuation Method

Asset Valuation Method	# of Plans	% of Plans	% of Total Going-Concern Assets
Market	867	80.3%	13.2%
Smoothed Market	212	19.6%	86.7%
Other	1	0.1%	0.1%
Total	**1,080**	**100.0%**	**100.0%**

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	11.1%	30	29	105%
CPM 2014 Public	91	8.4%	49	45	95%M,100%F
CPM 2014 Private	858	79.5%	305	294	105%
Other	9	0.8%	1	1	n/a
Plan Specific	2	0.2%	n/a	n/a	n/a
Total	**1,080**	**100.0%**			

54% of the plans which used the 2014 Public Sector Mortality Table made mortality adjustments, compared to 25% for 2014 Mortality Table and 36% for Private Sector Morality Table.

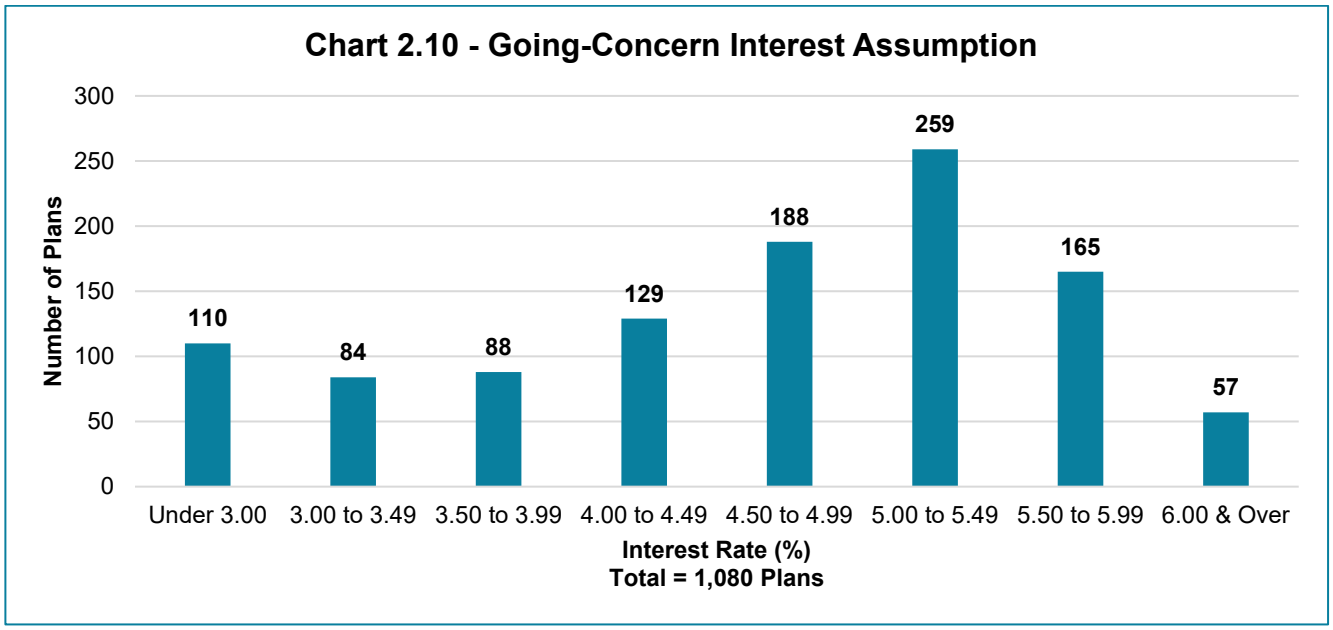
Statistics Canada indicated that life expectancy fell by more than half a year in 2020, the largest single-year decline in Canada since 1921 and the COVID-19 pandemic played an important role in this. The overall decrease in life expectancy in Canada coincided with increased mortality rates for most age groups. There is no doubt that COVID-19 may affect the longevity expectations of the pension plan members in the future. Plan sponsors and their actuaries should be aware of the longevity risk and its impact on the pension plans.

4. Interest rate assumptions used to value the going-concern liabilities have decreased relative to prior years. Compared to the 2020 Report, the use of a going-concern interest rate assumption of 5.50% or higher has declined by 6% while the use of an assumption of 4.00% or lower has increased by 7%.

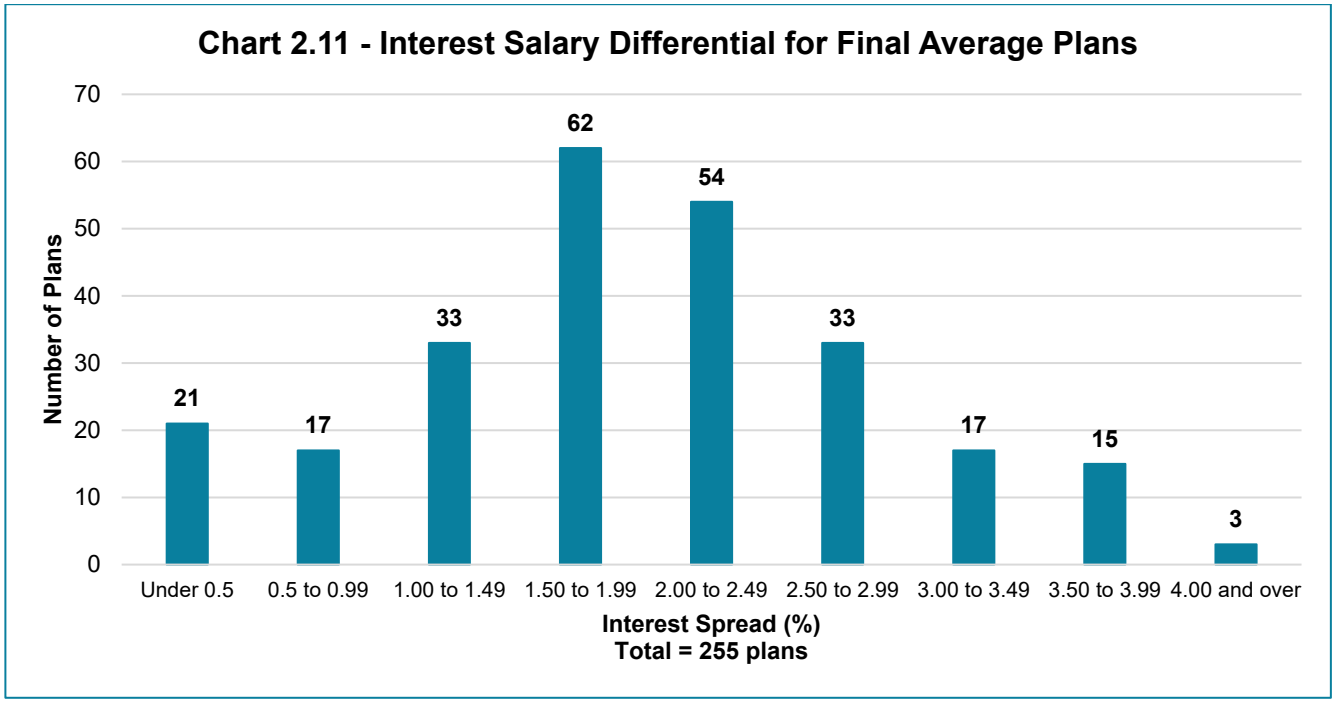
   Chart 2.10 shows the distribution of going-concern interest rate assumptions used in the most recently filed valuation reports. Overall, less than 2.5% of plans used an assumption over 6.00%, while more than 85% of plans used an assumption less than 5.50%.

   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 1.5% to 3.0% inclusive. This accounts for 58% of all plans providing final average benefits. The average spread between the interest assumption and the salary increase assumption narrowed to 1.90% from 2.07% in the 2020 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 2020 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	366	16,779	$26,911,920	$73,530	$1,604
100-499	382	90,636	62,450,300	163,482	689
500-999	121	83,679	39,856,000	329,388	476
1,000-4,999	143	302,867	94,715,000	662,343	313
5,000-9,999	36	265,301	54,306,000	1,508,500	205
10,000-49,999	23	424,621	157,862,000	6,863,565	372
50,000+	9	2,198,408	876,000,000	97,333,333	398
All Plans	**1,080**	**3,382,291**	**$1,312,101,220**	**$1,214,909**	**$388**

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. The 2021 Report is the first 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.

In response to the COVID-19 global pandemic which started in March 2020, the Ontario government amended the Regulation on September 21, 2020 to permit employers of certain pension plans to elect to defer one or consecutive monthly payments of employer contributions due beginning October 1, 2020, and ending on March 31, 2021 including normal cost, provision for adverse deviations in respect of the normal cost, and special payments. No employers sought this temporary funding relief during the pandemic.

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 25% of the open plans and 14% 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	57	0.39%	5.50%
Closed	111	0.29%	3.87%
Total	**168**	**5.66%**	**4.42%**

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 will generally be 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.

FSRA implemented a revised AIS in summer 2019 to capture new information with respect to the 2018 funding regime. The information in the new AIS will help inform FSRA and its stakeholders about pension plans' application of, and compliance with, the current DB plan funding rules. Currently this information is not available electronically for about 6% of the plans since they have not yet filed valuation reports using the revised AIS. FSRA will continue collecting the data as plans file using the new AIS and will include this analysis in future reports. In anticipation of the changes under the 2018 funding regime, FSRA implemented a manual ad-hoc process to collect and analyze some of the new information, which is shown in Tables 3.1 and 3.2. FSRA will continue to use this manual process for this data until all plans have filed using the revised AIS.

Of the pension plans included in the 2021 Report, 1,010 of the plans required to have a PfAD have filed a valuation report under the 2018 funding regime. 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	232	181,120	141,365	56,439	378,924	98,234	95,813	109.8%
Closed	778	134,820	217,359	95,949	448,128	95,100	85,733	107.9%
Total	**1,010**	**315,940**	**358,724**	**152,388**	**827,052**	**193,334**	**181,546**	**108.5%**

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	232	40.00%	4.0%	5.7%	5.5%	175	8.0%
Closed	778	50.00%	5.0%	5.3%	4.9%	667	10.0%
Total	**1,010**	**49.80%**	**4.5%**	**5.4%**	**5.1%**	**842**	**9.6%**

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.

[2] More information on SOMEPPs is available at: http://www.fsco.gov.on.ca/en/pensions/actuarial/Pages/MEPPsolvency-qanda.aspx

The following tables provide selected statistics on the MEPPs that contain a DB provision. Of these 68 MEPPs, 59 of them (covering over 97% of the total DB MEPP membership) have elected to become SOMEPPs.

Table 3.3 – Membership Information

	Total (*Median*) Membership Count				
	# of Plans	Active Members	Retired Members	Other Participants	Total
SOMEPPs	59	399,468 *(1,270)*	138,710 *(711)*	455,597 *(1,045)*	993,775 *(3,114)*
Non-SOMEPPs	9	7,629 *(119)*	8,870 *(111)*	9,850 (57)	26,349 *(612)*
Total (All DB MEPPs)	**68**	**407,097 *(1,045)***	**147,580 *(641)***	**465,447 *(909)***	**1,020,124 *(2,934)***

Table 3.4 – Funding Information

	Total (*Median*) Value			
	Market Value of Assets	Solvency Assets‡	Solvency Liabilities	Solvency Ratio
	(in Millions)			
SOMEPPs	$39,435 *($235)*	$39,266 *($234)*	$65,290 *($323)*	60.1% *(67.4%)*
Non-SOMEPPs	$2,798 *($50)*	$2,810 *($49)*	$2,564 *($53)*	109.6% *(109.8%)*
Total (All DB MEPPs)	**$42,233 *($188)***	**$42,076 *($187)***	**$67,854 *($300)***	**62.0% *(71.7%)***

‡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 six 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 67% compared to almost 110% for non-SOMEPPs.

4.0 Trends Analysis

The following trends analysis incorporates data from all filed reports with valuation dates between July 1, 2017 and June 30, 2021 and therefore may include more than one valuation report from any given pension plan.

4.1 Solvency Funded Status

Table 4.1 shows a breakdown of plans by solvency ratios for the past four annual valuation periods beginning on July 1 from 2017 to 2020[3]. The majority of plans have a valuation date of either December 31 or January 1.

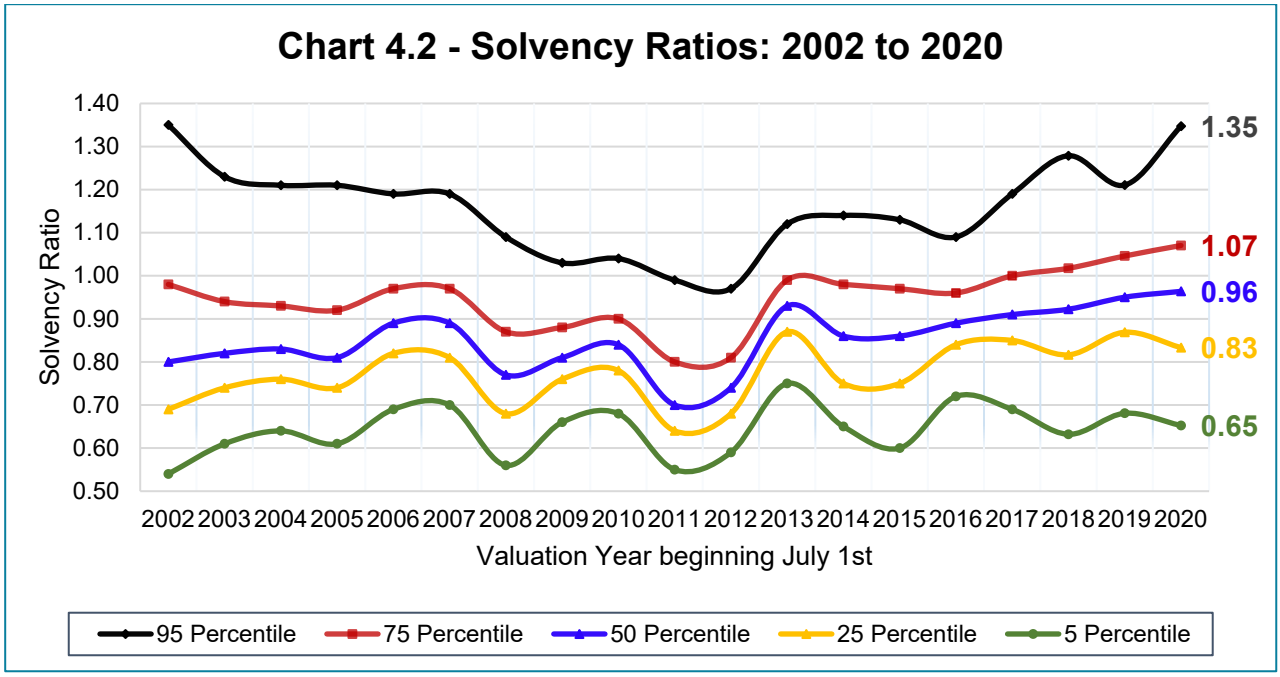
[3] The number of plans for 2017-2020 inclusive may differ from those reported in the 2020 Report due to a variety of reasons including reports filed after last year's cut-off date of Dec. 31, 2020, plans that have been wound up, converted to a DC arrangement, plans that filed a late report or have had their registration moved out of the province.

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

Solvency Ratio (SR)	July 1, 2017 to June 30, 2018		July 1, 2018 to June 30 2019		July 1, 2019 to June 30 2020		July 1, 2020 to June 30, 2021	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
SR < 0.60	13	1.7%	15	4.2%	21	3.2%	16	4.1%
0.60 ≤ SR < 0.80	61	8.3%	64	18.1%	74	11.1%	61	15.6%
0.80 ≤ SR < 0.85	47	6.4%	28	7.9%	25	3.7%	31	7.9%
Sub-Total < 0.85	**121**	**16.4%**	**107**	**30.2%**	**120**	**18.0%**	**108**	**27.6%**
0.85 ≤ SR < 0.90	133	18.0%	40	11.3%	112	16.8%	42	10.7%
0.90 ≤ SR < 1.00	303	41.1%	100	28.2%	191	28.6%	80	20.5%
Sub-Total < 1.00	**557**	**75.5%**	**247**	**69.7%**	**423**	**63.4%**	**230**	**58.8%**
1.00 ≤ SR < 1.20	151	20.4%	82	23.2%	209	31.3%	122	31.2%
SR ≥ 1.20	30	4.1%	25	7.1%	35	5.3%	39	10.0%
Total	**738**	**100.0%**	**354**	**100.0%**	**667**	**100.0%**	**391**	**100.0%**
Median Ratio	**0.93**		**0.93**		**0.95**		**0.96**	

The percentage of plans with a solvency ratio less than 0.85 has increased significantly from 18.0% during the 2019/2020 valuation period to 27.6% in the 2020/2021 valuation period. The proportion of underfunded plans on a solvency basis (i.e., a solvency ratio less than 1.0) continued to decrease steadily from 75.5% during the 2017/2018 valuation period to 58.8% in the 2020/2021 valuation period.

Chart 4.2 shows the distribution of solvency ratios at different percentiles from 2002 to 2020. 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 2017/2018 to 2020/2021, as well as for the three-year valuation period from July 1, 2018 to June 30, 2021.[4] Chart 4.3 compares the number of plans and Chart 4.4 compares the amount of solvency excess or deficit. The number of plans with solvency excess has remained well below the number of plans with solvency deficit.

[4] Individual valuation periods include those plans that filed a report with a valuation date that fell during that individual period. The July 1, 2018 - June 30, 2021 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.

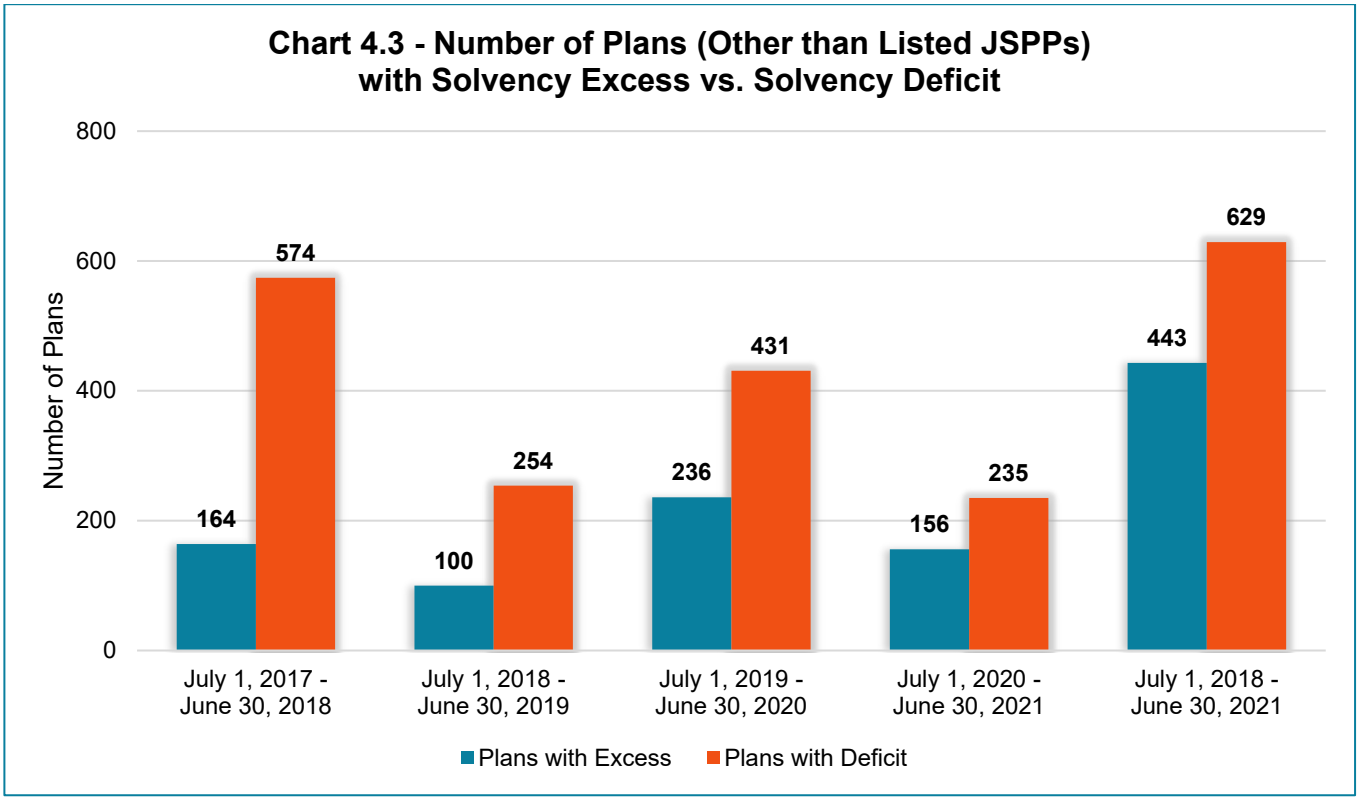
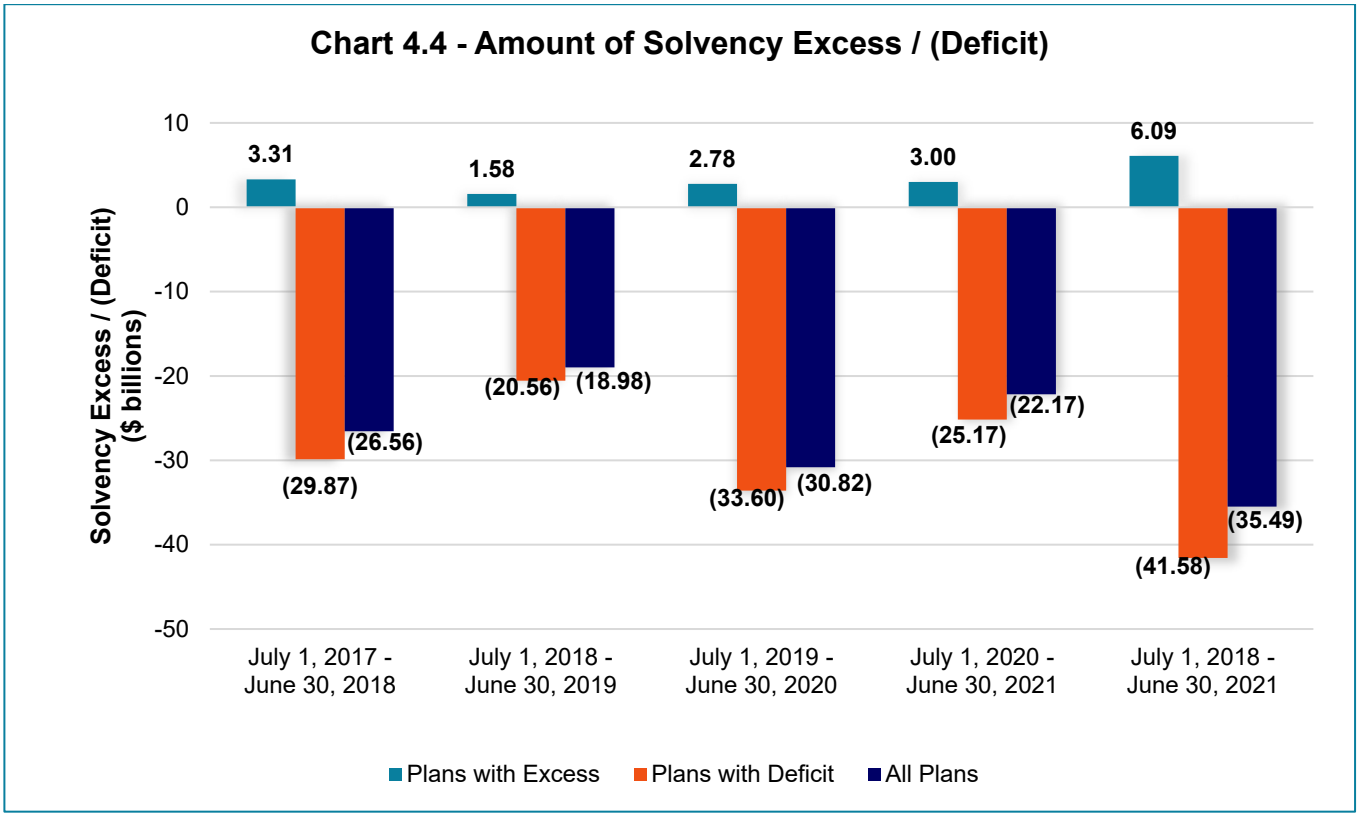


Chart 4.3 - Number of Plans (Other than Listed JSPPs) with Solvency Excess vs. Solvency Deficit
Number of Plans
800
600
400
200
0
164
574
100
254
236
431
156
235
443
629
July 1, 2017 - June 30, 2018
July 1, 2018 - June 30, 2019
July 1, 2019 - June 30, 2020
July 1, 2020 - June 30, 2021
July 1, 2018 - June 30, 2021
Plans with Excess
Plans with Deficit



On a dollar amount basis, the latest filed reports during the July 1, 2018 to June 30, 2021 valuation period revealed a *net* solvency deficit of $35.5 billion (after allowance for expenses) on solvency liabilities of $280.2 billion. This represents the total level of under-funding on a solvency basis for the 1,072 DB plans analyzed in the 2021 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 239 plans that excluded one or more of these benefits, resulting in a reduction of liabilities totaling $46.9 billion. Thus, the total wind up funding shortfall, after making allowances for expenses, is $82.4 billion ($35.5 billion plus $46.9 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

Table 4.5 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 in 2017/2018 and 2018/2019 valuation periods.

The trend of lower going-concern interest rate assumptions continues and the average of the assumed interest rate declined significantly year-over-year in the 2020/2021 valuation period by 0.54%. Moreover, the percentage of plans that used an interest rate below 4% has increased substantially, almost doubling from 19.2% to 37.1% in that period.

As mentioned earlier in section 2.2, virtually all of the pension plans that are required to use a PfAD have stopped incorporating an explicit margin they previously used when setting the going-concern interest rate assumptions. This would be expected to result in higher interest rate assumptions. However, the overall results in this section revealed quite the opposite. Of course, there are a number of reasons for assumed going-concern interest rates to decrease in aggregate. However, it appears that in many cases it is a result of de-risking strategies being implemented. This is supported by the significant increase in the use of an assumption of less than 4.0% and corroborated by discussions with plan sponsors and their advisors. FSRA will continue to monitor and analyze the data collected in order to understand emerging trends and to consider their implications on plan funding levels.

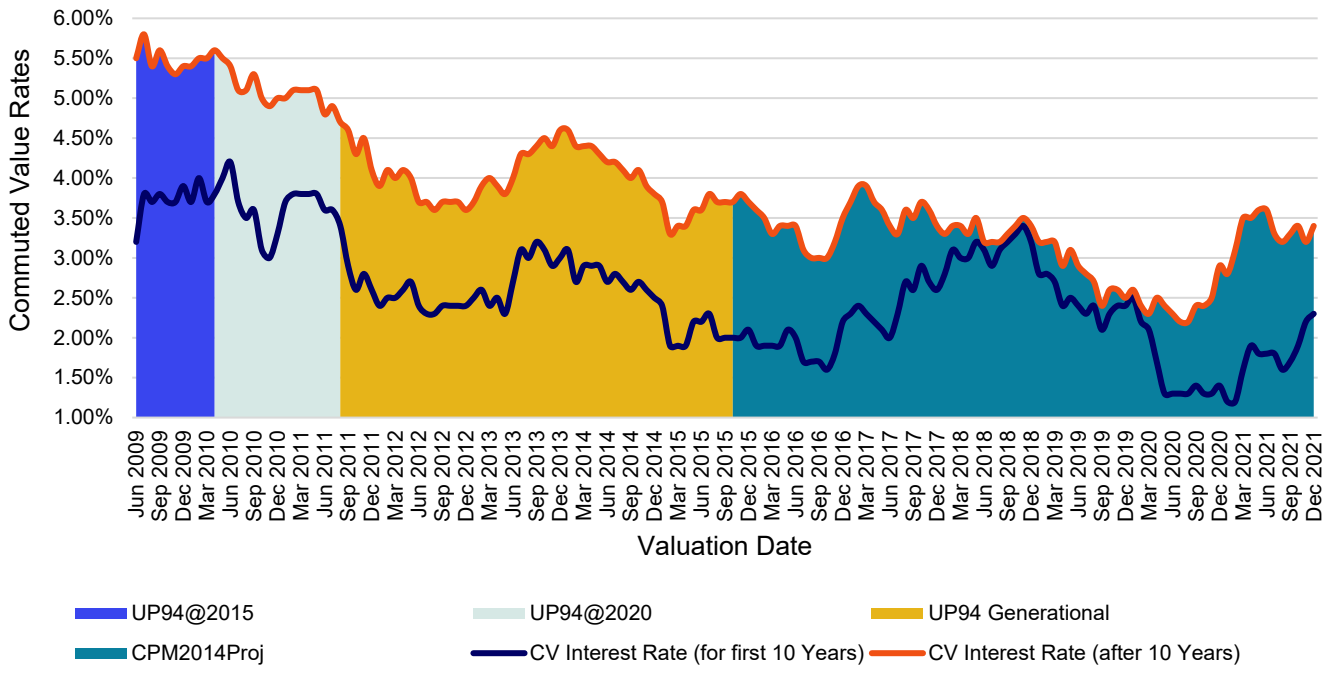
Table 4.5 – Going-Concern Interest Rate Assumption by Valuation Period

Rate (%)	July 1, 2017 to June 30, 2018		July 1, 2018 to June 30, 2019		July 1, 2019 to June 30, 2020		July 1, 2020 to June 30, 2021	
	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans	# of Plans	% of Plans
Rate < 4.00	89	11.9%	53	14.7%	129	19.2%	148	37.1%
4.00 ≤ Rate < 4.50	63	8.4%	26	7.2%	87	12.9%	47	11.8%
4.50 ≤ Rate < 5.00	99	13.3%	50	13.8%	112	16.6%	70	17.5%
5.00 ≤ Rate < 5.50	186	24.9%	83	23.0%	174	25.8%	79	19.8%
5.50 ≤ Rate < 6.00	206	27.6%	95	26.3%	120	17.8%	41	10.3%
6.00 ≤ Rate < 6.50	96	12.8%	49	13.6%	44	6.5%	11	2.8%
Rate ≥ 6.50	8	1.1%	5	1.4%	8	1.2%	3	0.7%
Total	**747**	**100.0%**	**361**	**100.0%**	**674**	**100.0%**	**399**	**100.0%**
Average (%)	**5.09%**		**5.04%**		**4.74%**		**4.20%**	

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.

Chart 4.6 Commuted Value Rates

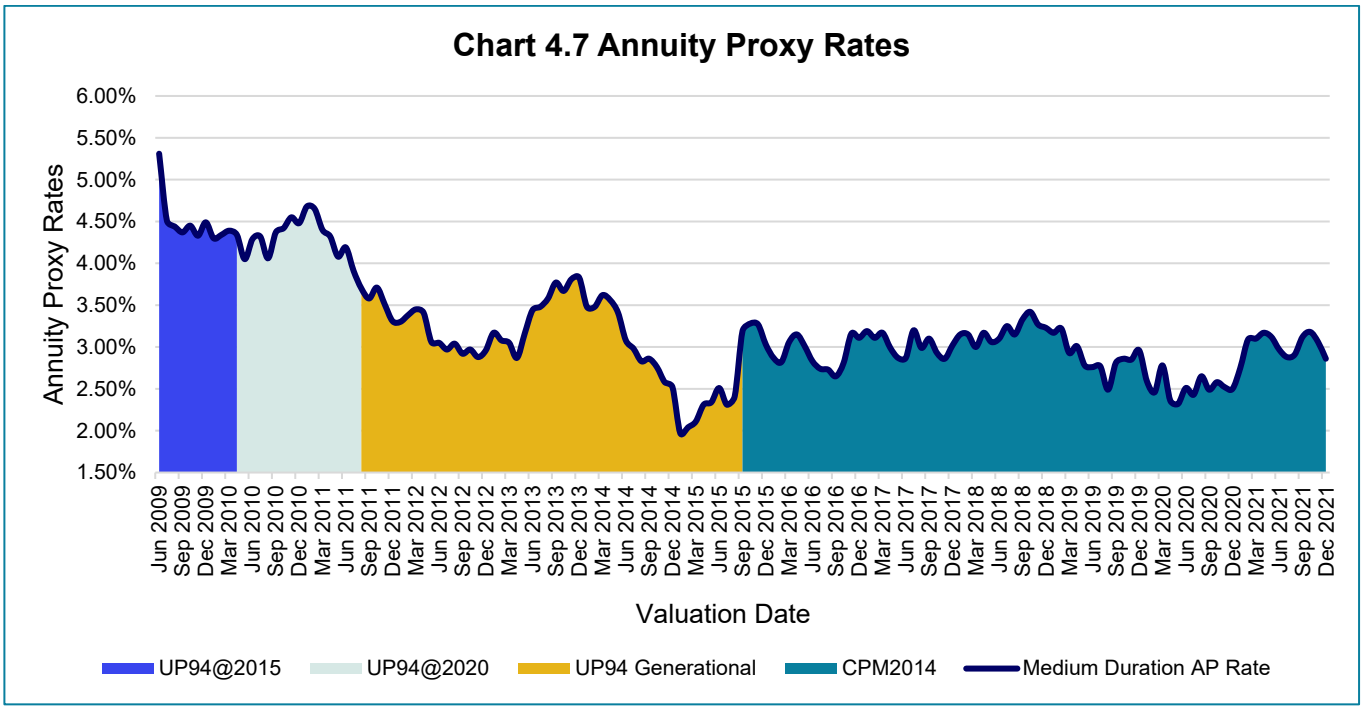


The CIA periodically updates its Guidance to actuaries for estimating the cost of purchasing a group annuity for Hypothetical Wind up and Solvency Valuations. An Educational Note was issued on March 11, 2022 from the Committee on Pension Plan Financial Reporting (PPFRC) that was applicable for valuation dates between December 31, 2021 and December 30, 2022. 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	8.7	100 bps
Medium Duration	11.3	120 bps
High Duration	13.9	120 bps

It should be noted that the 2021 Report does not reflect any updated guidance that may be issued by the PPFRC after March 11, 2022. Historically, any such guidance would not affect calculations up to December 31, 2021, the end date of the period covered by the 2021 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.



5.0 Investment

The plans included in the investment data analysis are a subset of the 1,080 plans identified in Section 2 of this 2021 Report. This subset consists of plans that have filed an Investment Information Summary (IIS) for the most recent 2021 monitoring cycle (fiscal year-ends between July 1, 2020 and June 30, 2021). There are 1,066 plans included in the investment data analysis, representing 99% of the plans included in the funding data analysis.[5] This number includes the eight 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 1,066 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.

[5] Plans not included here are primarily plans with outstanding IIS filings.

Table 5.1 – Investment Profile of All Plans

	SEPP		MEPP		Listed JSPP	
Number of Plans	991		67		8	
Asset Mix	Market Value (in Millions)	% of Total Investments	Market Value (in Millions)	% of Total Investments	Market Value (in Millions)	% of Total Investments
Cash	$9,584	4.4%	$1,249	2.9%	$53,764	10.5%
Bond	$95,142	44.1%	$13,651	31.2%	$181,679	35.4%
Equity	$74,972	34.8%	$19,881	45.5%	$77,439	15.1%
Real Estate	$15,806	7.3%	$5,349	12.2%	$40,542	7.9%
Alternative Investments[6]	$20,212	9.4%	$3,603	8.2%	$159,247	31.1%
Total	**$215,716**	**100.0%**	**$43,733**	**100.0%**	**$512,671**	**100.0%**
Performance	SEPP		MEPP		Listed JSPP	
Average Gross Return[7]	10.00%		7.38%		7.64%	
Average Investment Fees	0.35%		0.41%		0.34%	
Average Admin Fees	0.51%		0.42%		0.16%	
Average Total Fees	0.87%		0.83%		0.51%	

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

[7] 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 1,066 pension funds is 7.87%, compared to 9.82% on an equally-weighted basis.

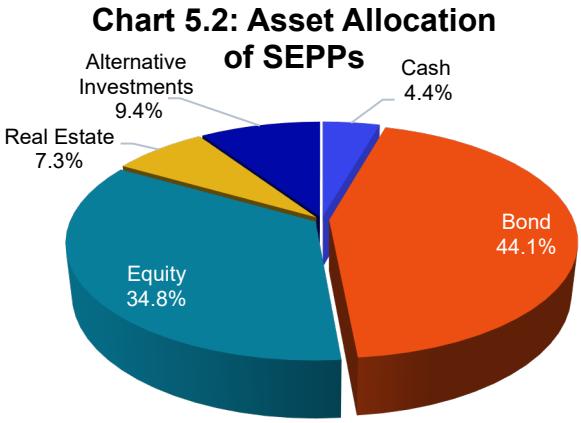


Chart 5.2: Asset Allocation of SEPPs

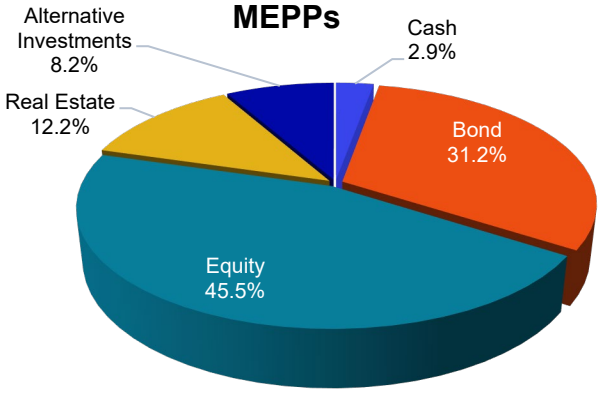


Chart 5.3: Asset Allocation of MEPPs

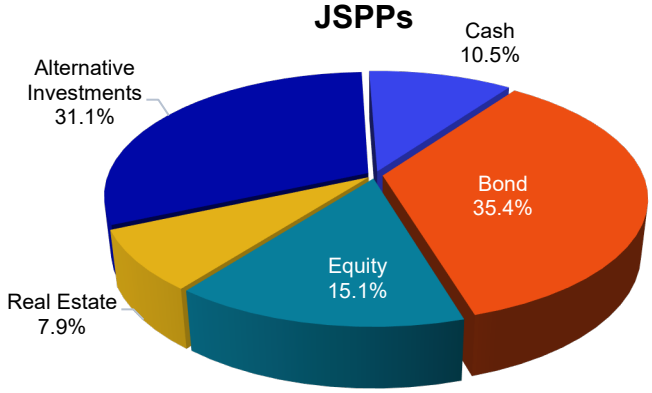


Chart 5.4: Asset Allocation of Listed JSPPs

On a broad basis, traditional fixed income assets (consisting of cash and bonds) constitute 49% of total investments for the SEPPs. Non-fixed income assets (consisting of equity, real estate and alternative investments) constitute 51% 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 eight 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.

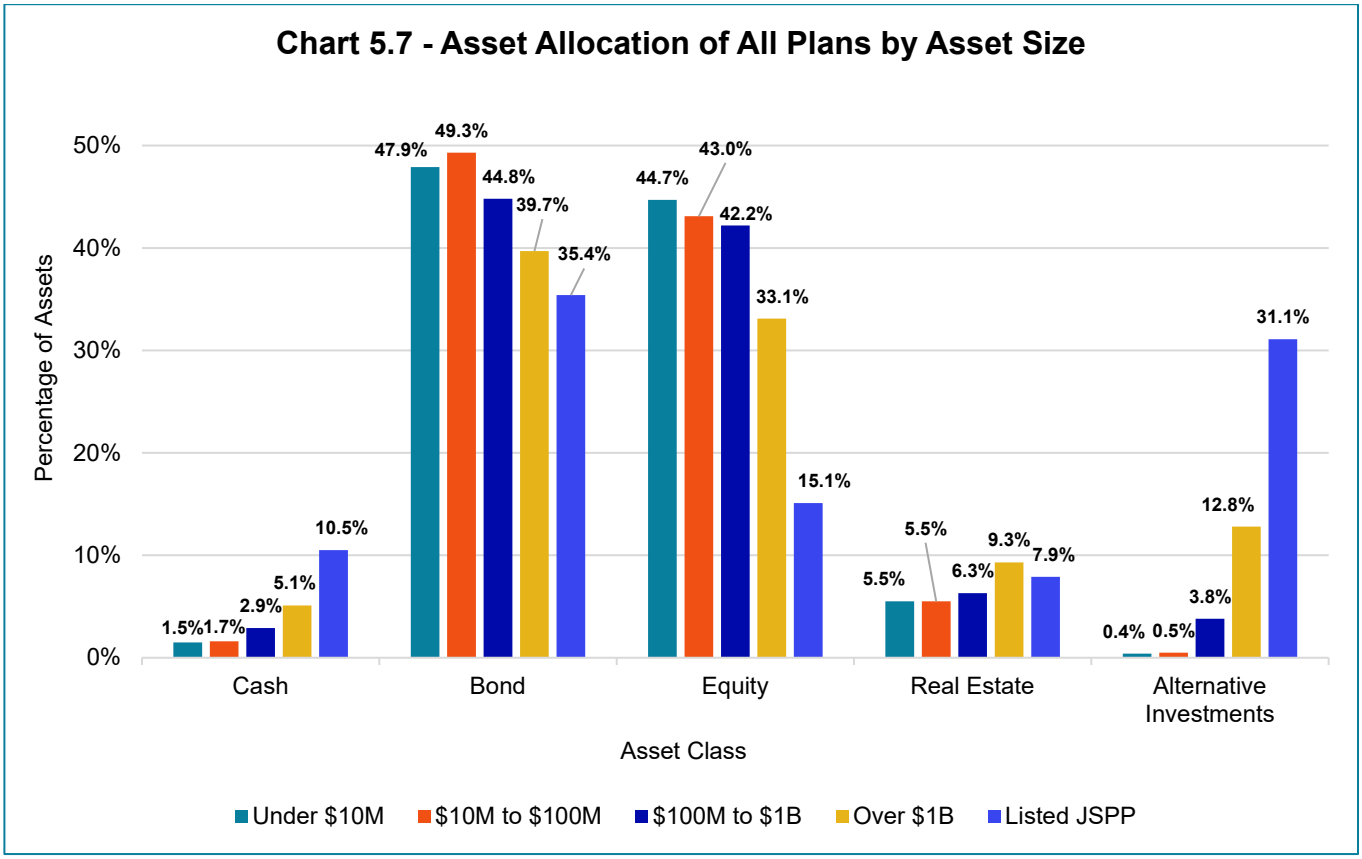
Table 5.5 – Performance Result Percentiles by Plan Type

Plan Type	SEPP	MEPP	Listed JSPP	All Plans
# of Plans	991	67	8	**1,066**
Gross Investment Returns				
90th Percentile	13.86%	12.38%	11.17%	**13.72%**
75th Percentile	12.05%	9.50%	10.15%	**11.91%**
Median	10.03%	8.06%	9.24%	**9.84%**
25th Percentile	8.02%	5.73%	7.06%	**7.88%**
10th Percentile	5.66%	2.10%	2.51%	**5.43%**
Investment Fees				
90th Percentile	0.72%	0.57%	0.64%	**0.71%**
75th Percentile	0.51%	0.48%	0.40%	**0.51%**
Median	0.32%	0.40%	0.27%	**0.33%**
25th Percentile	0.12%	0.31%	0.23%	**0.14%**
10th Percentile	0.00%	0.21%	0.17%	**0.00%**
Administrative Fees				
90th Percentile	1.15%	0.71%	0.32%	**1.13%**
75th Percentile	0.57%	0.40%	0.22%	**0.55%**
Median	0.28%	0.22%	0.12%	**0.27%**
25th Percentile	0.10%	0.13%	0.10%	**0.10%**
10th Percentile	0.00%	0.06%	0.08%	**0.00%**
Total Fees				
90th Percentile	1.65%	1.28%	0.87%	**1.63%**
75th Percentile	1.03%	0.80%	0.52%	**1.01%**
Median	0.65%	0.65%	0.41%	**0.65%**
25th Percentile	0.39%	0.50%	0.33%	**0.40%**
10th Percentile	0.21%	0.35%	0.32%	**0.23%**

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 JSPP	All Plans
# of Plans	273	493	244	48	8	**1,066**
Cash	1.5%	1.7%	2.9%	5.1%	10.5%	**8.4%**
Bond	47.9%	49.3%	44.8%	39.7%	35.4%	**37.6%**
Equity	44.7%	43.0%	42.2%	33.1%	15.1%	**22.3%**
Real Estate	5.5%	5.5%	6.3%	9.3%	7.9%	**8.0%**
Alternative Investments	0.4%	0.5%	3.8%	12.8%	31.1%	**23.7%**
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**
Performance						
Average Gross Return	9.15%	9.93%	10.05%	11.71%	7.64%	**9.82%**
Average Investment Fees	0.50%	0.33%	0.27%	0.30%	0.34%	**0.36%**
Average Admin Fees	0.89%	0.48%	0.21%	0.12%	0.16%	**0.51%**
Average Total Fees	1.39%	0.81%	0.48%	0.43%	0.51%	**0.86%**



Investment data reported in previous annual reports on the funding and investment of DB pension plans in Ontario from 2012 to 2021 monitoring cycles (each starting at July 1st the previous year) demonstrates a general decreasing trend in pension fund asset allocation in equity and a general increasing trend in real estate and alternative investments. The asset allocation of all plans (other than the Listed JSPPs) over this period is shown in Table 5.8 and depicted in Chart 5.9.

Table 5.8 – Asset Allocation of All Plans (Other than Listed JSPPs) from 2012 to 2021

Asset Class	% of Total Investments									
	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Cash	3.1%	3.1%	2.7%	2.9%	3.3%	3.7%	3.4%	4.2%	3.9%	4.2%
Bond	42.3%	40.4%	39.4%	41.8%	42.4%	41.1%	38.9%	41.4%	41.5%	41.9%
Equity	49.1%	50.8%	52.0%	48.0%	45.3%	44.7%	43.0%	37.2%	36.9%	36.6%
Real Estate	1.5%	1.5%	1.5%	1.7%	1.8%	2.1%	3.8%	9.0%	9.1%	8.1%
Alternative Investments	4.0%	4.2%	4.4%	5.6%	7.2%	8.4%	10.9%	8.2%	8.6%	9.2%
Total	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**	**100.0%**

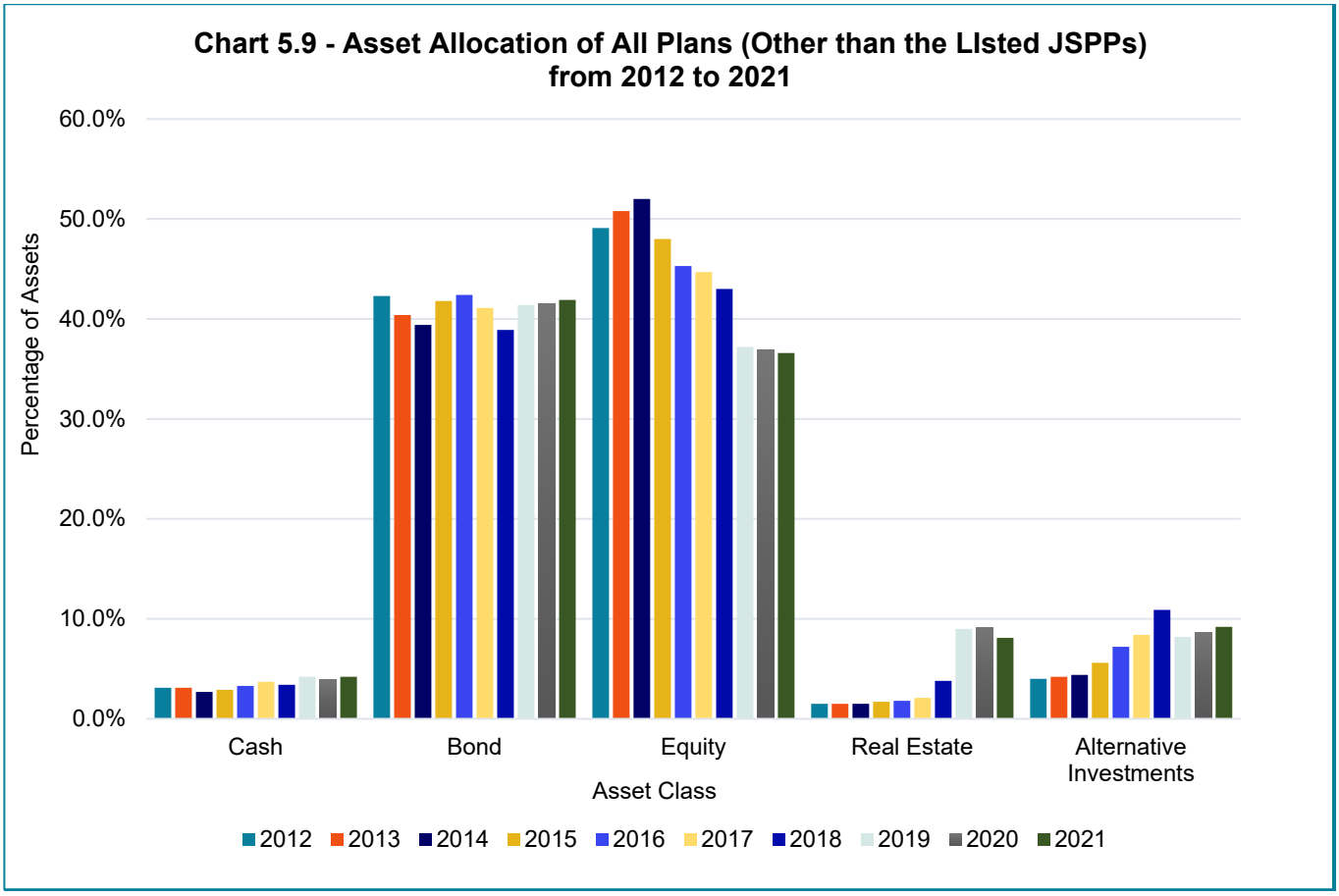
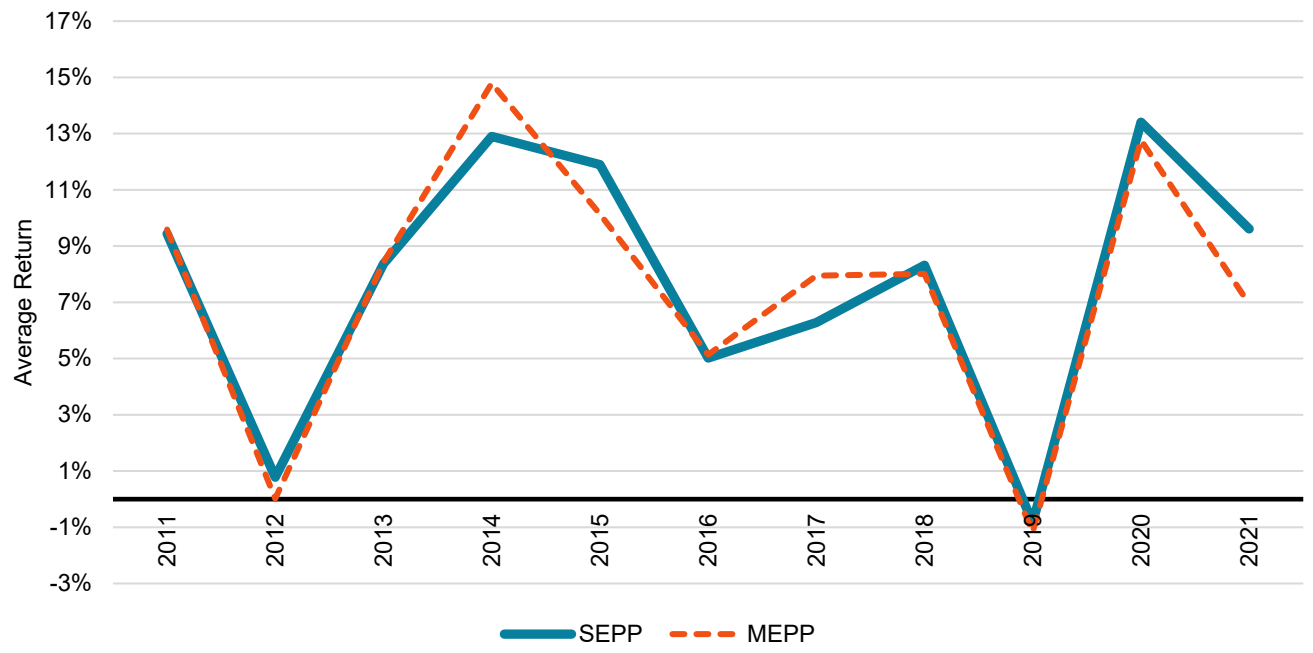


Chart 5.9 - Asset Allocation of All Plans (Other than the LIsted JSPPs) from 2012 to 2021
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Percentage of Assets
Cash
Bond
Equity
Real Estate
Alternative Investments
Asset Class
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021

Chart 5.10 - Average Investment Returns (Net of Investment Fees) SEPP and MEPP (2011-2021)



5.2 Additional Information

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

By solvency ratio (for plans other than Listed JSPPs)

Table 5.11 – Investment Results by Solvency Ratio (SR)

Solvency Ratio (SR)		SR < 0.85	0.85 ≤ SR < 1	SR ≥ 1.0	All Plans
# of Plans		136	487	435	**1,058**
Asset Mix	Fixed Income (Cash and Bond)	35.7%	47.8%	54.2%	**46.1%**
	Equity	38.9%	41.6%	30.2%	**36.6%**
	Real Estate	11.1%	6.4%	6.9%	**8.1%**
	Alternative Investments	14.3%	4.2%	8.7%	**9.2%**
Performance	Average Gross Return	7.99%	9.90%	10.34%	**9.84%**
	Average Investment Fees	0.41%	0.36%	0.34%	**0.36%**

It appears that better funded plans tend to have higher allocation to fixed income – this could perhaps be attributed to any de-risking strategies that these plans might have implemented.

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

Table 5.12 – 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	38	15
	Average Gross Return	7.61%	10.45%	9.41%	10.34%
	Average Investment Fees	0.28%	0.22%	0.27%	0.19%
20% - 80%	Number of plans	14	35	61	22
	Average Gross Return	8.51%	8.37%	9.29%	12.16%
	Average Investment Fees	0.30%	0.33%	0.28%	0.40%
>80%	Number of plans	247	420	145	11
	Average Gross Return	9.26%	10.01%	10.54%	12.68%
	Average Investment Fees	0.53%	0.34%	0.26%	0.27%
Total	**Number of plans**	**273**	**493**	**244**	**48**
	Average Gross Return	**9.15%**	**9.93%**	**10.05%**	**11.71%**
	Average Investment Fees	**0.50%**	**0.33%**	**0.27%**	**0.30%**

Allocation to pooled funds decreases with size of the plan. There appears to be a positive relationship between the percentage of assets invested in pooled funds and gross returns for the mid-size plans and the reverse is observed for plans with over $1 billion in assets.

6.0 Baseline Projections

This section estimates annual funding contributions and funded positions of all plans to December 31, 2021 to facilitate continued monitoring and trend analysis.

6.1 Estimated DB Funding Contributions in 2022

Table 6.1 presents 2022 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 most recently filed plan valuation reports between July 1, 2018 and June 30, 2021.[8]

Table 6.1 – Estimated DB Funding in 2022

	SEPP		MEPP	Listed JSPP	All Plans
	Plans with Solvency Excess	Plans with Solvency Deficit			
Number of Plans	436	568	68	8	1,080
(In Millions)					
Employer Normal Cost Contributions	$795	$1,784	$1,651	$5,909	$10,139
Member Required Contributions	$231	$845	$155	$5,538	$6,769
Sub-total	**$1,026**	**$2,629**	**$1,806**	**$11,447**	**$16,908**
Special Payments	$41	$589	$183	$735	$1,548
Total	**$1,067**	**$3,218**	**$1,989**	**$12,182**	**$18,456**

[8] For plans where the AIS reported contributions did not extend to cover 2022, the 2022 estimated contributions were determined assuming contributions would continue at the last available rate.

Total 2022 DB funding contributions are estimated to be $18.5 billion of which 8.4% represents special payments of $1.5 billion. This compares to the total 2021 DB funding contributions estimated in the 2020 Report of $18.2 billion. The increase of $210 million consists of increases of $195 million in employer normal costs and $161 million in member required contributions and a decrease of $146 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 $41 million represent 3.8% of total contributions for SEPPs with a solvency excess. This compares with special payments of $589 million, representing about 18.3% of total contributions for SEPPs with solvency deficits.

Estimated 2022 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, 2021

December 31, 2021 solvency position projection

Table 6.2 presents the distribution of solvency ratios reported in 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 2021 (with a comparison of PSRs as at December 31, 2020 from the 2020 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, 2021			
		SEPP	MEPP	Listed JSPP	All Plans
Median SR	**97%**	**110%**	**84%**	**111%**	**109%**
SR < 70%	5%	1%	22%	0%	2%
70% ≤ SR < 85%	9%	1%	32%	0%	3%
85% ≤ SR < 100%	45%	18%	25%	37%	19%
100% ≤ SR	41%	80%	21%	63%	76%

The median projected solvency ratio for all plans has increased to 109% as at December 31, 2021 from 96% as at December 31, 2020. The increase is primarily attributable to:

- A 7.1% increase due to a rise in the solvency valuation interest rates as at December 31, 2021 from their December 31, 2020 levels; and
- A 5.9% increase due to an estimated median net investment return of 10.4% as well as estimated contributions made in 2021.

December 31, 2021 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, 2021 to facilitate further proactive tracking in the future. December 31, 2021 going-concern funding ratios were developed by projecting DB going-concern plan assets and actuarial liabilities to the end of 2021 and reflecting actual/estimated investment returns to the end of 2021.

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, 2021			
		SEPP	MEPP	Listed JSPP	All Plans
Median GC Ratio	**108%**	**116%**	**115%**	**106%**	**116%**
GC Ratio < 85%	3%	2%	1%	0%	2%
85% ≤ GC Ratio < 100%	22%	12%	1%	0%	12%
100% ≤ GC Ratio	75%	86%	98%	100%	86%

It should be noted that the going-concern ratios are determined as defined in the Regulation and do not include any PfAD (the ratios would be lower if PfADs were included).

Methodology and assumptions

Results reported in the most recently filed valuation reports (i.e., assets and liabilities) were projected to December 31, 2021 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 2018, 2019 and 2020 were determined based on its IIS fillings.

Table 6.4 – Individual Plan 2018, 2019 and 2020 Rate of Return Statistics

	5th Percentile	1st Quartile	2nd Quartile	3rd Quartile	95th Percentile
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%
2018 Gross Return	-4.1%	-2.2%	-1.0%	0.4%	6.2%
2018 Net After Investment Expense	-4.6%	-2.6%	-1.4%	0.1%	5.7%
2018 Net After All Expense	-5.7%	-3.2%	-1.8%	-0.2%	5.3%

For 2021, each plan's returns were estimated based on its 2020 IIS asset allocation information in conjunction with 2021 market index returns, offset by a 25 basis point quarterly expense allowance.

Table 6.5 – Estimated Rate of Return Statistics for 2021 based on Market Index Returns

	5th Percentile	1st Quartile	2nd Quartile	3rd Quartile	95th Percentile
2021 Gross Return	-2.5%	5.8%	11.5%	12.9%	17.5%
2021 Net After All Expense	-3.5%	4.7%	10.4%	11.8%	16.4%

Table 6.6 – 2021 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 2021	6.5%	7.5%	1.5%	4.8%	11.6%
Q3 2021	0.2%	2.3%	-0.5%	-1.6%	1.5%
Q2 2021	8.5%	6.2%	1.7%	3.7%	9.2%
Q1 2021	8.1%	3.5%	-5.0%	-10.7%	3.7%

Table 6.7 – Projected Solvency Valuation Bases at December 31, 2020 and 2021:

	Commuted Value Basis	Annuity Purchase Basis
December 31, 2021	Interest: 2.30% for 10 years, 3.40% thereafter Mortality: CPM2014 generational	Interest: 2.86% Mortality: CPM2014 generational
December 31, 2020	Interest: 1.40% for 10 years, 2.90% thereafter Mortality: CPM2014 generational	Interest: 2.50% 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.

8.0 Appendix – 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, 2018 and June 30, 2021. Please refer to Section 2.0 – Funding Data for details of how the data was compiled.

Table 8.1 shows a reconciliation of the 1,149 plans analyzed in the 2020 Report to the 1,080 plans analyzed in the 2021 Report and Table 8.2 compares the number of plans analyzed in the current report with the plans analyzed in previous reports.

Table 8.1 – Reconciliation of Plans from the 2020 Report to the 2021 Report

Plan Type	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSPP	Total
2020 Report	**304**	**83**	**138**	**343**	**205**	**69**	**7**	**1,149**
New plans / Spin-offs								0
Change Jurisdiction	1	1	(1)	(1)		(1)		(1)
Asset Transfer	(16)	(10)	(1)	(3)	(5)			(35)
Conversion from DB to DC					(2)			(2)
Conversion from SEPP to JSPP	(1)						1	0
Wind up	(3)	(5)	(3)	(13)	(8)			(32)
Data Correction	1							1
2021 Report	**286**	**69**	**133**	**326**	**190**	**68**	**8**	**1,080**

Table 8.2 – Plans Included in Current and Previous Reports by Plan/Benefit Type

Year	Final Average	Career Average	Flat Benefit	Hybrid	Frozen DB & Hybrid	MEPP	Listed JSPP	Total	Total Membership
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
2007	663	236	362	292	n/a	79	0	1,632	1,880,563
2006	730	271	394	224	n/a	79	0	1,698	1,863,433
2005	805	293	424	127	n/a	73	0	1,722	1,801,895

Table 8.3 shows a breakdown of the number of plans by size of plan membership and Table 8.4 shows a breakdown of the total members covered by size of plan membership.

Table 8.3 – Number of Plans by Size of Membership in Plan

Number of Members in Plan	SEPP	MEPP	Listed JSPP	Total
0 - 49	204	0	0	204
50 - 99	161	1	0	162
100 - 249	224	3	0	227
250 - 499	154	1	0	155
500 - 999	108	12	1	121
1,000 - 4,999	120	23	0	143
5,000 - 9,999	25	10	1	36
10,000 +	8	18	6	32
Total	**1,004**	**68**	**8**	**1,080**

Table 8.4 – Total Membership by Size of Membership in Plan

Number of Members in Plan	SEPP	MEPP	Listed JSPP	Total
0 - 49	4,815	0	0	4,815
50 - 99	11,904	60	0	11,964
100 - 249	36,267	582	0	36,849
250 - 499	53,333	454	0	53,787
500 - 999	74,011	9,071	597	83,679
1,000 - 4,999	248,541	54,326	0	302,867
5,000 - 9,999	181,983	73,703	9,615	265,301
10,000 +	232,148	881,928	1,508,953	2,623,029
Total	**843,002**	**1,020,124**	**1,519,165**	**3,382,291**