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Enterprise Risk Management

Managing Risks in Uncertain Times



Over the last three years, we have experienced a pandemic, geopolitical tensions and significant supply chain disruptions, all of which have impacted the global economy. These are truly unprecedented times. Risks are constantly evolving, feeling at once new and yet familiar, and changes in the economic, regulatory and technological landscape, as well as in the global climate, give rise to new challenges and opportunities.

As actuaries, we are in the business of risk and uncertainty – we estimate it, model it, analyze it and assess it. Depending on our risk appetite, we can choose to accept it, avoid it, mitigate it or share it with a third party.

This collection of articles on enterprise risk management (ERM) from the Canadian Institute of Actuaries (CIA) highlights timely hot topics taking centre stage in today's world of risk management. The articles are written by subject matter experts, both actuaries and non-actuaries, who offer their own professional opinions and experiences.

The articles cover a breadth of topics, including climate transition risk, housing (renting versus owning), inflation risk, long COVID, managing risks in small- and medium-sized retirement plans and risk disclosures. While some of these topics may be practice specific, the themes can generally be applied universally by all risk practitioners.

The CIA's Enterprise Risk Management Practice Committee would like to acknowledge the authors who have provided us with these thought-provoking articles. In addition, this publication would not have been possible without the efforts from our committed volunteers and the staff at the CIA Head Office. The committee would also like to acknowledge the contribution of the working group that assisted in the development of this publication: Kathy Thompson, Chair, Devika Prashad, Phil Traicus and Tonia Tse.



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A Scorecard for Comparative Analysis of Risk Disclosures and Research Findings

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The authors developed a scorecard to assess a company’s risk disclosures, specifically those in Section 1A of Form 10-K provided by public companies regulated by the U.S. Securities and Exchange Commission (SEC).¹ Canadian-regulated companies have an analogous requirement: the Annual Information Form.² The scorecard is based on guidance from the SEC and on the authors’ expertise in enterprise risk management (ERM).

- 1 These requirements are found in the U.S. Code of Federal Regulations (CFR), specifically [Title 17, Part 229, Item 105 Risk Factors](#). All SEC guidance quoted throughout this article is from the CFR.
- 2 See the Ontario Securities Commission, “Form 51-102F2 Annual Information Form,” National Instrument 51-102 Continuous Disclosure Obligations (Unofficial Consolidation, current to June 30, 2015), specifically [Section 5.2 Risk Factors](#).



We conducted a research study using this scorecard to assess how the quality of risk disclosures varies across a selection of market sectors, as well as across companies within these sectors. The research study included 40 large companies – 10 each from the mid-tier banking, technology, retail and life insurance sectors – based on their 2020 10-K reports. This involved an extensive word-by-word analysis of nearly half a million words.

This article introduces the scorecard, which the authors recommend as a standard that companies can adopt to evaluate their risk disclosures. As we describe each element of the scorecard, we provide selected research findings to illustrate its usage.

The scorecard is herein referred to as the ERM Comparative Analysis of Risk Disclosures, or E-CARD.

E-CARD uses three criteria that comprise a total of 10 factors. These criteria are:

- 1** Level of focus on important risks
- 2** Quality of risk description from an ERM perspective
- 3** Quality of risk description from a general perspective



CRITERION 1: LEVEL OF FOCUS ON IMPORTANT RISKS

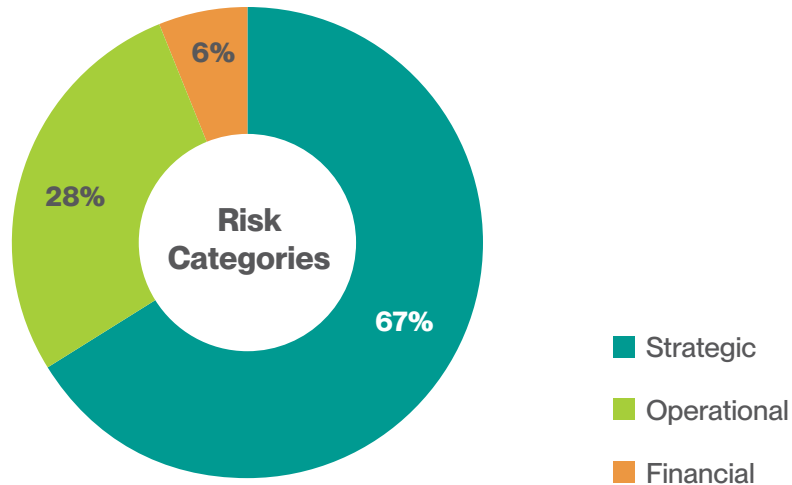
We defined two characteristics for this criterion. The first is that disclosures should prioritize risks with the largest potential impact on shareholder value. The relevant SEC guidance here is to focus on the “most significant factors.” The second is that disclosures should only include material risks. This is particularly important because the SEC recently expanded their guidance that disclosures be “concise” by adding a new requirement to include a separate summary if the risk disclosures are too lengthy.

Starting with the first characteristic, how should we determine which risks have the largest potential impact on shareholder value? Multiple ERM research studies³ and years of ERM client work indicate that the categories of ERM risks – large volatility items that impact shareholder value – rank in relative importance as shown in Figure 1. These studies and our client work consistently show the same proportions of this relative importance, regardless of industry sector.

3 See, for example, the 2015 study [Front-Page Risks: Risks Commonly Occurring and Reported in the Canadian News](#), written by Sim Segal and published by the Casualty Actuarial Society, Canadian Institute of Actuaries and Society of Actuaries Joint Risk Management Section, which examines risks to corporate entities appearing over a one-year period in the Toronto edition of *The Globe and Mail*.



**Figure 1:
Relative importance of risk categories**



The categories in **Figure 1** are defined as follows:

Strategic risk: Unexpected changes in areas of strategic importance, such as strategy risk, execution risk, governance risk, competitor risk, regulatory risk, international risk, supply chain risk, etc.

Operational risk: Unexpected changes in operations, such as human resources risk, technology risk, process risk, compliance risk, external fraud, disaster risk, etc.

Financial risk: Unexpected changes in external markets and prices, such as market risk, credit risk, liquidity risk, commodity price risk, economic risk, etc.

(Insurance risk – often a separate category defined as pricing risk, underwriting risk and reserving risk – is herein captured elsewhere by the source of the risk; for example, human error resulting in mispricing is captured under human resources risk, a technology glitch resulting in mispricing is captured under technology risk, and so on.)

E-CARD uses two factors to evaluate the extent to which a company's disclosed risks, when mapped to their originating source by risk category, are in proportions that match ERM importance, or their potential impact on shareholder value. The standard we set for appropriate proportions of ERM importance is the relative emphasis by risk category – strategic, operational and financial – as shown in Figure 1. Factor 1A relies on word count (i.e., the number of words describing a category's risks) and Factor 1B uses risk count (i.e., the number of risks within a category).

Factors 1A and 1B are both needed, because investors may infer subtle but materially different signals from each type of match level. Presenting a set of risks sends one message, while allocating more words to selected risks may send another.

The metric used is the sum of the deviations from the three standard percentages. As a result, a lower measure for these two factors is a better score.



Figure 2 shows the best and worst company result for Factor 1A. This reveals a surprisingly wide range of quality for this factor – the best company had nearly a perfect match to the standard representation of categories by word count (just 1% sum of deviations), whereas the worst company had a very poor alignment (91% sum of deviations), particularly in its overrepresentation of financial risks.



Figure 2:
E-CARD Factor 1A: Risk category emphasis matching ERM importance – word count:
Best and worst company results

	Worst	Best	Standard
Strategic	38.3%	66.2%	66.7%
Operational	10.2%	27.7%	27.5%
Financial	51.5%	6.1%	5.8%
Sum. of Dev.	91.3%	1.0%	

The results by risk count (Factor 1B) also reveal a range of varying quality across companies, though the range is less extreme than the results by word count. The details are omitted here for brevity.

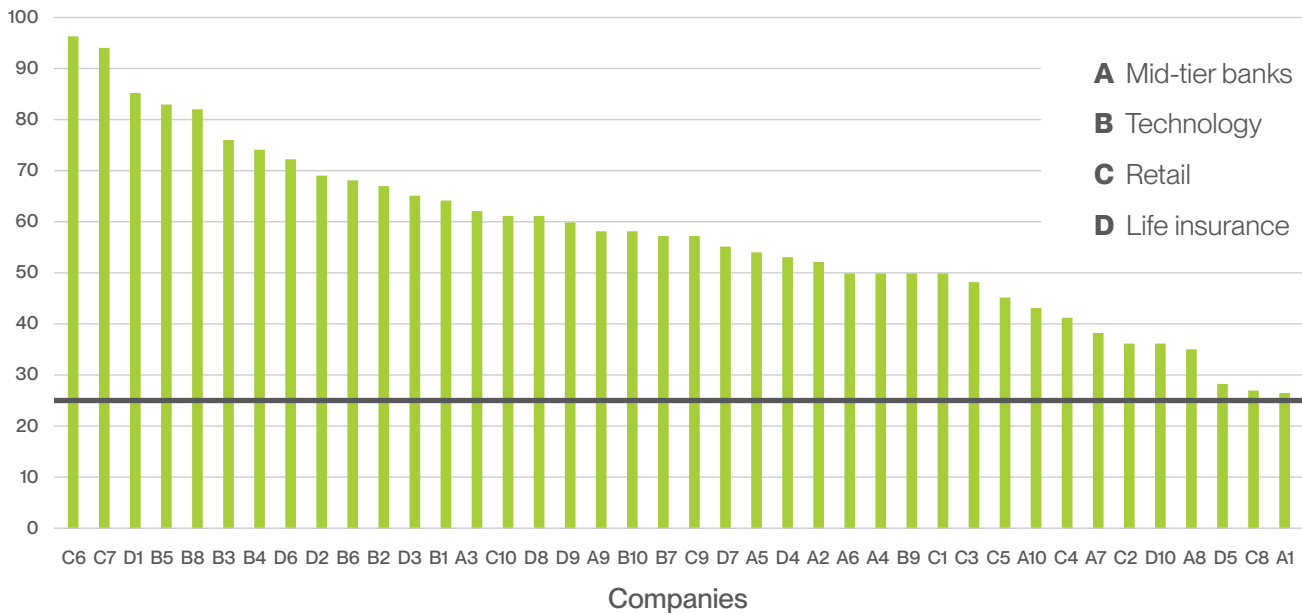
The second characteristic – that disclosures only include material risks – is measured by a single E-CARD factor: Factor 1C: Number of risks not too high. The SEC noted recently that most companies disclose both material and immaterial

risks, believing this minimizes legal exposure, which has resulted in an increase in the number of risks disclosed in recent years; however, this may be counter-productive insofar as it violates SEC guidance. We used 25 risks as our benchmark, because as the number of key risks in an ERM program begins to exceed this level, the efforts tend to lose focus. The score for this factor decreases with the excess of disclosed risks over 25.



Figure 3 shows the results for all 40 companies (anonymously). The number of risks disclosed ranges from a nearly ideal 26 to an astonishingly excessive 96.

Figure 3:
Number of risks disclosed by company



CRITERION 2: QUALITY OF RISK DESCRIPTION FROM AN ERM PERSPECTIVE

We defined two characteristics for this criterion. The first characteristic is that risks should be clearly defined by source. The second characteristic is that the impacts on the company resulting from the risks should be fully described; the relevant SEC guidance here is to “explain how the risk affects the issuer.”

The importance of the first characteristic – that risks should be clearly defined by source – cannot be overstated. Failure to do so often corrupts assessment of the likelihood and/or severity of a risk. Consider the following example: A risk

identified as “reputational risk” is not properly defined by source. There are many different sources of risk – poor product quality, poor customer service, a scandal, etc. – that can trigger negative media coverage with the potential to damage a company’s reputation. Whether or not reputational damage is involved is merely a matter of degree – the level of each separate risk’s extreme scenarios. Each risk source must be separately assessed because the likelihood of occurrence and the severity of impact can differ dramatically.



E-CARD uses three factors to evaluate the extent to which a company is clearly defining risks by source and also fully describing the risk impacts:

- **Factor 2A:** Quality of describing risks by source
- **Factor 2B:** Quality of describing impact of risks
- **Factor 2C:** Percentage of risks comprehensively described by source and impact

The first two factors separately evaluate the quality of the risk description in terms of the extent to which it clearly defines the risk by source and fully

describes the impact of the risk on the company. The third factor measures the percentage of risks that comprehensively satisfy both of these criteria within each risk description; this adds something important, because when a risk receives our highest marks for both qualities, we consider it a complete and robust risk description.

The results of the study for Factor 2C show that the best company described more than three of every four (78%) of its risks comprehensively by both source and impact, whereas the worst company so described only about one of every six (16%) of its risks.

CRITERION 3: QUALITY OF RISK DESCRIPTION FROM A GENERAL PERSPECTIVE

This criterion comprises four characteristics:

1. **Quality of organization** – the relevant SEC guidance here is that disclosures be “organized logically” and that they place “each risk factor under a sub-caption.”
2. **Readability** – this is the common-sense quality that risk descriptions are easy to comprehend.
3. **Relevance** – words used should describe or relate directly to essential aspects of the risk, i.e., risk sources or impacts.
4. **Brevity** – the relevant SEC guidance here is that disclosures be “concise.”

Quality of organization

Quality of organization is measured by a single factor – Factor 3A: Quality of organization – which is the average number of sub-captions used to describe each risk. The higher the number, the lower the score, because ideally, all risks should be described only by a single sub-caption. Results show that while the best company did have the ideal score of 1.00, the worst company used an average of 1.57 sub-captions to describe each risk.

Readability

To evaluate readability, E-CARD Factor 3B uses the Flesch Reading Ease score. The Flesch scale ranges from the worst category (1-30) – “very difficult to read” – to the best category (90-100) – “very easy to read.” All companies scored in the worst category, but there still was a wide range of results, with the worst company scoring a 10.4 and the best company scoring a 27.8.



Relevance

We quantified the level of relevance with Factor 3C as the percentage of “non-zero” words, which are words that relate directly to describing either the source or impact of the risks. The results show that some companies are very capable of a high level of relevance, with the best company’s descriptions consisting of virtually all (98.3%) non-zero words. The results also show that some companies are prone to a high level of non-relevance, with the worst company having one in every three words being superfluous (66.2% non-zero words).

Brevity

We measured brevity by the level of efficiency, with Factor 3D finding the number of risks expressed per 1,000 words. The results uncovered one of the largest differentiators of companies, with the best company covering 10.2 risks every 1,000 words and the worst managing only 2.4 risks every 1,000 words.

Overall scores

Overall scores represented by letter grades are shown in Figures 4 and 5. Weights used to aggregate scores to the criterion and overall levels reflected the relative importance of each element; for example, for the overall score, Criterion 1 (level of focus on important risks) received more weight than the other two criteria (related to the quality of description), because focusing on the appropriate set of risks is relatively more important than the manner in which they are described.

Figure 4 shows that only 10% of companies achieved some form of A grade. Figure 5 scores the retail sector best overall, the technology sector best in terms of both level of focus (Criterion 1) and quality of risk description from a general perspective (Criterion 3), and the life insurance sector best in terms of quality of risk description from an ERM perspective (Criterion 2).

Figure 4: Breakdown of companies by overall score

Grade	A+	A	A-	B+	B	B-	C+	C	C-	D
# Companies	1	2	1	2	6	7	9	5	2	5

Figure 5: Overall score by sector and criterion

	Mid-tier banking	Technology	Retail	Life insurance
Criterion 1: Level of focus on important risks	C+	B-	C+	D
Criterion 2: Quality of risk description from an ERM perspective	C	C+	B	A
Criterion 3: Quality of risk description from a general perspective	B+	A-	B	C+
Overall score	B-	B-	B	C





Closing comments

The results indicate that the quality of risk disclosures varies significantly both across and within the market sectors studied and that most companies have much room to improve their risk disclosures. Improvements in the quality of the risk description from a general perspective (Criterion 3) can be made merely by focusing on the clarity of communication. However, our experience indicates that the opportunity to improve in the areas of Criteria 1 and 2 resides largely in enhancing ERM practices. The following are two such examples:

- Adopting an ERM approach that addresses all risk categories (strategic, operational and financial), identifying them holistically and quantifying them by impact on value, can improve the level of focus on important risks (Criterion 1).
- Consistently defining risks by source and developing robust individual risk scenarios can enable a more sophisticated risk description from an ERM perspective (Criterion 2).

Another aspect to consider is that lower scores on Criterion 1 and/or Criterion 2 may indicate a failure to appropriately align external risk disclosures with what is known internally by the ERM team.

Some aspects of the opportunity to improve risk disclosures speak to broader internal benefits while others involve enhancing information to the market. Either way, there is much to be gained from a thorough examination of one's own risk disclosures from the perspectives outlined in this study.





Accounting for Inflation Risk in P&C Reserves

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THE INFLATIONARY ENVIRONMENT

According to Statistics Canada, in 2022 Canadians experienced inflation at an annualized rate of 6.8%, a contrast with the past decade of steady and low inflation levels hovering around 1.7% annually. Notable historic high inflationary times in Canada include the 10 years of sustained high inflation averaging 9.6% from 1973 to 1982 and an all-time high of 21.6% in June of 1920. With these occurrences in mind, P&C actuaries currently face the uncertainty of reserving in an inflationary environment without knowing how high inflation could reach and how long inflation could last. How should P&C actuaries be accounting for inflation when estimating reserves? Are traditional reserving methods suitable in a high inflation environment?

The traditional paid and incurred development methods (or “chain ladder” methods) are most commonly used in estimating reserves for both long-tail and short-tail property and casualty coverages. In a normal environment, inflationary impact would be reflected in the loss development factors selections. However, in an inflationary environment, the past is not necessarily indicative of the future, implying that loss development factors based on the past may not be suitable for estimating future ultimate losses. We propose a method to adjust historic paid loss development data for inflation before applying development methods to estimate ultimate losses.



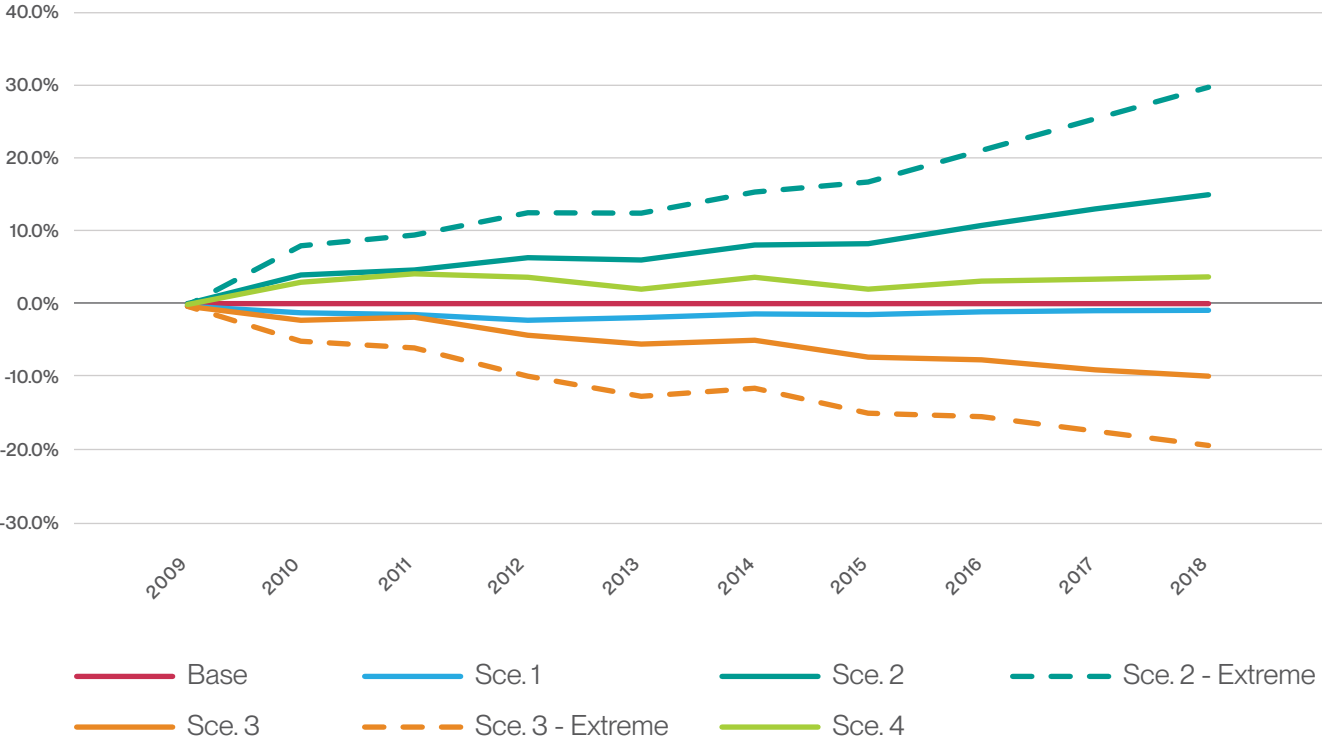
PROPOSED APPROACH

We developed a method to adjust the paid loss triangle for the impact of inflation before applying the traditional paid development method. We demonstrate through an example using commercial auto accident benefits industry data under various scenarios to compare the estimated ultimate losses adjusted for inflation against the ultimate losses under the paid development method without adjustments.

Below is a summary of our results for each scenario (sce.) while detailed calculations of the inflation adjustments under Scenario 2 is shown in the appendix.

Scenario	Base	1	2	3	4
Past Inflation	-	Normal	Normal	High	High
Future Inflation	-	Normal	High	Normal	High

Variation of Unpaid Losses by Accident vs. Base Scenario



Following are details about the steps underlying the methodology:

- 1. Paid losses – cumulative:** For illustration purpose, the all-year weighted average was applied to select paid loss development factors.
- 2. Paid losses – incremental:** Derive the incremental loss triangle from step 1.
- 3. Historic inflation:** Determine the historic inflation level by calendar year using the consumer price index (CPI) or any other metrics that apply to the line of business analyzed. This example uses the Canadian CPI from Statistics Canada's health care services category. This is used to compute the cost level to bring each calendar year of payments to the current year level.
- 4. Inflation index triangle – historic:** Determine the historic inflation index triangle from step 3.
- 5. Inflation-adjusted paid losses – incremental:** Steps 2 and 4 are multiplied to calculate incremental paid losses adjusted to the current year level. This removes any historic inflationary bias from the data.
- 6. Inflation-adjusted paid losses – cumulative:** The cumulative paid loss triangle is calculated from step 5. The all-year weighted average loss development factors are used to project cumulative paid losses at future periods.
- 7. Projected paid losses – incremental:** Derive the incremental paid losses at future periods from step 6.
- 8. Future inflation:** Estimate the future inflation level by calendar year using the CPI or any other metrics that apply to the line of business analyzed. This example uses the Canadian CPI – Statistics Canada health care services category from 2019 to 2022, and then 3% selected judgmentally in future years.
- 9. Inflation index triangle – forward looking:** From step 8, the cost level is computed as the cumulative factor to bring each calendar year of payments to their respective future calendar year levels.
- 10. Inflation (future) adjusted paid losses – incremental:** Derive the future adjusted paid loss by multiplying step 7 by step 9 to get the adjusted ultimate losses by accident year.
- 11. Comparison of loss reserve:** Compare original loss reserves vs. loss reserves adjusted for inflation and make any necessary adjustment to prior steps' assumptions. Since this is only one methodology in adjusting for inflation, it could be useful for the user to compare the results with other methods such as the expected loss ratio and the unadjusted Bornhuetter-Ferguson methods.



SCENARIO RESULTS

To test our methodology, we designed various scenarios with different past and future rates of inflation and compared the scenario results against the base scenario without inflationary adjustments. Given historic inflation rates, we judgmentally selected 8% as the sustained rate of inflation for both the past and/or the future. Our methodology was tested on a long-tail line¹ with and without multiple large losses. Lastly, we simulated a short-tail² line which was tested with and without catastrophic losses.

Base scenario: The traditional chain ladder method was used to project losses to ultimate levels.

Scenario 1: When past and future inflation levels are relatively stable, averaging 3% per year, the impact of making these inflationary adjustments in setting reserves is minimal.

Scenario 2: We assumed sustained inflation of 8% in the next nine forecast years. When past inflation levels are relatively stable but future inflation levels are expected to be high, the traditional paid development method significantly underestimates unpaid losses. As observed in the appendix, the impact is more significant for the most recent accident years, which usually account for the bulk of the total unpaid losses. Adjusting for the impact of inflation is recommended. An extreme scenario with a sustained inflation of 12% in the next nine forecast years was also tested. As observed in the appendix, the variation of unpaid losses grows exponentially for the most recent accident years,

increasing the inadequacy of the unadjusted chain ladder unpaid losses.

Scenario 3: We assumed sustained inflation of 8% in the last five historic years. When past inflation levels are high but future inflation levels are expected to return to “normal” levels, the traditional paid development method significantly overestimates unpaid losses. As observed in the appendix, the impact is more significant for the most recent accident years, which usually account for the bulk of the unpaid losses. Adjusting for the impact of inflation is recommended. An extreme scenario with a sustained inflation of 12% in the last five historic years was also tested. As observed in the appendix, the variation of unpaid losses decreases at an increasing rate for the most recent accident years, increasing the inadequacy of the unadjusted chain ladder unpaid losses.

Scenario 4: We assumed sustained inflation of 8% in the last five historic years and 8% in the next nine forecast years. When past inflation levels are high and future inflation levels are expected to be high, the impact can either be over- or under-estimated depending on the inflation levels. Adjusting for the impact of inflation is recommended.

Scenarios of large losses: Multiple large losses were simulated and inserted into the long-tail loss experience. The observations from testing the four scenarios are the same, implying that loss experience with multiple large losses do not need to be treated for inflation any differently.

- 1 Long-tail lines refer to product that carries a long settlement period until the claims are closed. They are likely to have higher incurred but not reported reserves than short-tail lines because of the longer settlement period. Examples of them are medical coverage in automobile insurance and commercial liability.
- 2 As opposed to long-tail lines, short-tail lines include products that are usually settled over a short period of time. Examples of them are collision coverage in automobile insurance and non-liability residential insurance.



Scenarios of a short-tail line: A paid losses triangle of a short-tail line was simulated and the same four scenarios were run. The short-tail line exhibited much lower impact, suggesting that the amount of effort in making inflation adjustments may outweigh the impact on short tail lines. Catastrophic losses were simulated and inserted into the short-tail loss triangle – the conclusions from testing the four scenarios are the same as the short-tail loss triangle conclusions without catastrophic losses.



OBSERVATIONS AND CONSIDERATIONS

Based on scenario results, adjusting for the impact of inflation is recommended under circumstances where there has been high inflation in recent years and/or high inflation is expected in the immediate future. Also, any time historic and future inflation levels are expected to differ, an adjusted method should be considered. The traditional paid development method is not ideal in changing inflationary environments because it projects reserves as if historic inflation impact is expected to continue into the future.

When it is determined that adjusting for inflation is needed, the paid loss development triangle and the a priori expected loss ratio should be adjusted before applying the incurred development method, incurred or paid Bornhuetter-Ferguson methods or expected loss methods. While inflation impact can be applied directly to case reserve triangles, the actuary should obtain an understanding of its claims-adjusting philosophy and whether or not claims adjusters considered effects of inflation when setting case reserves, before deciding whether or not to adjust for inflation in case reserves.

Statistics Canada provides indices for many categories, from broad to specific, and various regions, whether countrywide or province-specific. In considering the appropriate inflation indices to use, actuaries may consider the following categories from the Canadian CPIs published on the Statistics Canada website:

- homeowners' maintenance and repairs
- travel services
- air transportation
- purchase, leasing and rental of passenger vehicles
- purchase, leasing and rental of recreational vehicles
- purchase, leasing and rental of trucks
- owned accommodation
- passenger vehicle parts, accessories and supplies
- passenger vehicle maintenance and repair services
- medicinal and pharmaceutical products
- prescribed medicines





Conclusion

With the actuarial profession in constant evolution and growth, most actuaries have not worked in inflationary times and have not routinely placed heavy consideration on inflation risk in reserving, capital modelling, financial condition testing or other areas of actuarial work. However, given the current inflationary environment and with the uncertainty around the future, we believe actuaries should recognize and account for inflation risk, particularly in setting reserves.

Different approaches could be considered depending on the stage of inflation we are at, whether it is early, mid or the latter part of an inflationary cycle. Also, whether the current inflationary environment is low, normal or high, actuaries should carefully consider adjusting for inflation risk in the determination of future payments, especially when using the paid development method for long-tail lines of business. Moreover, it is important to consider various sources of data from professional expertise and opinions (i.e., economists, statisticians) to ensure inherent risks are fully captured and assumptions about past and future inflation are justified and appropriately applied.

Through this article we hope actuaries will consider using alternative methods to adjust for inflation risk such as the one explained here.



APPENDIX

SCENARIO 2 – IMPACT OF INFLATION UNDER “NORMAL” PAST AND HIGH FUTURE INFLATION LEVELS

1. Paid Loss Triangle – Cumulative

AY	12	24	36	48	60	72	84	96	108	120	Ult. Loss	Reserve
2009	2,985	7,462	10,099	13,041	15,394	16,295	16,737	17,044	17,413	17,458	17,458	0
2010	2,178	4,879	7,613	10,174	11,406	12,521	13,433	13,601	13,596		13,631	35
2011	1,487	3,640	6,266	9,316	11,883	13,512	14,388	14,752			14,966	214
2012	1,652	3,955	5,799	7,664	9,054	11,171	12,327				12,741	414
2013	1,615	4,499	7,373	9,760	13,621	14,645					16,095	1,450
2014	2,836	6,441	9,449	12,128	14,953						18,251	3,298
2015	1,920	5,064	7,623	10,730							16,098	5,368
2016	2,041	5,303	8,672								17,471	8,799
2017	2,166	5,874									18,047	12,173
2018	2,429										18,624	16,195
All Yr. Wt.Avg	2.4956	1.5250	1.3429	1.2292	1.1106	1.0633	1.0188	1.0119	1.0026	1.0000		
CDF	7.6673	3.0723	2.0147	1.5003	1.2206	1.0990	1.0336	1.0145	1.0026	1.0000		

2. Paid Loss Triangle – Incremental

AY	12	24	36	48	60	72	84	96	108	120
2009	2,985	4,477	2,637	2,942	2,353	901	442	307	369	45
2010	2,178	2,701	2,734	2,561	1,232	1,115	912	168	(5)	
2011	1,487	2,153	2,626	3,050	2,567	1,629	876	364		
2012	1,652	2,303	1,844	1,865	1,390	2,117	1,156			
2013	1,615	2,884	2,874	2,387	3,861	1,024				
2014	2,836	3,605	3,008	2,679	2,825					
2015	1,920	3,144	2,559	3,107						
2016	2,041	3,262	3,369							
2017	2,166	3,708								
2018	2,429									



3. CPI: Health Care Services in Canada

Year	CPI Index	Index	Cost Level
2009	3.56%	1.036	1.313
2010	4.52%	1.045	1.268
2011	2.89%	1.029	1.213
2012	2.40%	1.024	1.179
2013	2.84%	1.028	1.151
2014	3.43%	1.034	1.119
2015	2.67%	1.027	1.082
2016	2.32%	1.023	1.054
2017	3.04%	1.030	1.030

4. Inflation Index Triangle – Historical

AY	12	24	36	48	60	72	84	96	108	120
2009	1.313	1.268	1.213	1.179	1.151	1.119	1.082	1.054	1.030	1.000
2010	1.268	1.213	1.179	1.151	1.119	1.082	1.054	1.030	1.000	
2011	1.213	1.179	1.151	1.119	1.082	1.054	1.030	1.000		
2012	1.179	1.151	1.119	1.082	1.054	1.030	1.000			
2013	1.151	1.119	1.082	1.054	1.030	1.000				
2014	1.119	1.082	1.054	1.030	1.000					
2015	1.082	1.054	1.030	1.000						
2016	1.054	1.030	1.000							
2017	1.030	1.000								
2018	1.000									

5. Inflation (Historical) Adjusted Paid Loss Triangle – Incremental (② x ④)

AY	12	24	36	48	60	72	84	96	108	120
2009	3,919	5,676	3,198	3,468	2,709	1,009	478	324	380	45
2010	2,761	3,276	3,223	2,948	1,379	1,207	961	173	(5)	
2011	1,804	2,538	3,023	3,414	2,778	1,717	903	364		
2012	1,947	2,651	2,064	2,019	1,465	2,181	1,156			
2013	1,859	3,229	3,111	2,516	3,978	1,024				
2014	3,175	3,902	3,171	2,760	2,825					
2015	2,078	3,315	2,637	3,107						
2016	2,152	3,361	3,369							
2017	2,232	3,708								
2018	2,429									



6. Inflation (Historical) Adjusted Paid Loss Triangle – Cumulative (from ⑤)

AY	12	24	36	48	60	72	84	96	108	120
2009	3,919	9,595	12,793	16,261	18,970	19,979	20,457	20,781	21,161	21,206
2010	2,761	6,037	9,260	12,209	13,588	14,795	15,756	15,929	15,924	15,958
2011	1,804	4,342	7,365	10,779	13,558	15,275	16,178	16,542	16,711	16,746
2012	1,947	4,599	6,663	8,682	10,147	12,328	13,484	13,706	13,846	13,876
2013	1,859	5,088	8,199	10,715	14,693	15,717	16,599	16,871	17,044	17,080
2014	3,175	7,077	10,248	13,008	15,833	17,426	18,403	18,706	18,897	18,937
2015	2,078	5,393	8,029	11,136	13,489	14,846	15,678	15,936	16,099	16,133
2016	2,152	5,513	8,882	11,754	14,237	15,670	16,548	16,820	16,992	17,028
2017	2,232	5,940	8,907	11,787	14,277	15,713	16,595	16,867	17,040	17,076
2018	2,429	5,936	8,900	11,779	14,267	15,702	16,583	16,856	17,028	17,064
All Yr. Wt. Avg	2.4437	1.4995	1.3234	1.2112	1.1006	1.0561	1.0164	1.0102	1.0021	1.0000
% Diff. Compared to Non-Adj	-2.08%	-1.67%	-1.45%	-1.46%	-0.90%	-0.68%	-0.24%	-0.16%	-0.05%	0.00%

7. Projected Paid Loss Triangle – Incremental (from ⑥)

AY	12	24	36	48	60	72	84	96	108	120	Reserve
2009											
2010										34	34
2011									169	36	205
2012								222	140	29	391
2013							882	273	172	36	1,363
2014						1,593	977	302	191	40	3,104
2015					2,352	1,357	833	258	163	34	4,997
2016				2,873	2,483	1,432	879	272	172	36	8,147
2017			2,967	2,881	2,490	1,436	881	273	172	36	11,136
2018		3,507	2,965	2,879	2,488	1,435	881	272	172	36	14,635



8. Expected Inflation in Future Periods

Year	CPI Index	Index	Cost Level
2009	8.00%	1.0800	1.080
2010	8.00%	1.0800	1.166
2011	8.00%	1.0800	1.260
2012	8.00%	1.0800	1.360
2013	8.00%	1.0800	1.469
2014	8.00%	1.0800	1.587
2015	8.00%	1.0800	1.714
2016	8.00%	1.0800	1.851
2017	8.00%	1.0800	1.999

9. Inflation Index Triangle – Forward Looking

AY	12	24	36	48	60	72	84	96	108	120
2009										1.000
2010									1.000	1.080
2011								1.000	1.080	1.166
2012						1.000	1.080	1.166	1.260	1.360
2013				1.000	1.080	1.166	1.260	1.360	1.469	1.587
2014			1.000	1.080	1.166	1.260	1.360	1.469	1.587	1.714
2015		1.000	1.080	1.166	1.260	1.360	1.469	1.587	1.714	1.851
2016	1.000	1.080	1.166	1.260	1.360	1.469	1.587	1.714	1.851	1.999
2017										
2018										

10. Inflation (Future) Adjusted Paid Loss Triangle – Incremental (7 x 9)

AY	12	24	36	48	60	72	84	96	108	120	Reserve
2009											
2010										37	37
2011									183	41	224
2012								239	163	37	440
2013						1,720	1,140	381	260	59	3,560
2014				2,540	1,583	1,049	350	239	54	5,816	
2015			3,103	2,896	1,804	1,196	399	273	62	9,733	
2016		3,204	3,360	3,136	1,954	1,295	433	295	67	13,745	
2017	3,787	3,458	3,626	3,385	2,109	1,398	467	319	72	18,621	
2018											



11. Comparison of Loss Reserve

Year	Original w/o Infl. Adj.	With Hist. Adj	Inflation Impact	Adj. w/ Future Infl.	Inflation Impact
2009	0	0		0	
2010	35	34	3.8%	37	4.1%
2011	214	205	4.5%	224	4.8%
2012	414	391	5.9%	440	6.2%
2013	1,450	1,363	6.4%	1,537	6.0%
2014	3,298	3,104	6.3%	3,560	7.9%
2015	5,368	4,997	7.4%	5,816	8.3%
2016	8,799	8,147	8.0%	9,733	10.6%
2017	12,173	11,136	9.3%	13,745	12.9%
2018	16,195	14,635	10.7%	18,621	15.0%
	47,946	44,011		53,712	12.0%





Climate Transition Risk: An Opportunity for Insurers

Co-authors:



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As we absorb the events of [COP 27](#) and [COP 15](#), there is clearly an opportunity, and an expectation, for private finance to play a significant role in climate transition. For insurers in particular, there are exciting times ahead because their unique business model and their exposure to climate-related risks give them a real chance to have a positive impact.



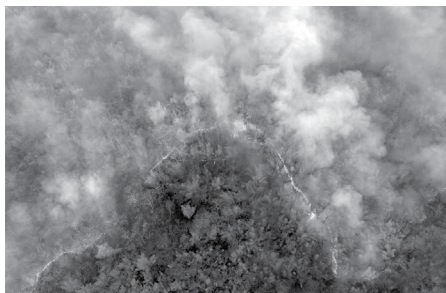
FIRST, THE BASICS

While it seems you can't turn on the news without seeing examples of the physical impacts of climate change (floods, wildfires, etc.), transition risks can be less obvious. From a climate perspective, transition risks are those that arise due to societal, policy and economic shifts toward reducing greenhouse gas (GHG) emissions and impacts on climate. These risks can come in a number of forms:

Economics/Sustainability: As science informs the need for greener and more sustainable development, there will likely be a shift towards new sectors that contribute more substantially to economic growth. This could affect insurers' business strategies, including investments.

Policy/Regulation: Anyone paying attention to the debate on climate action has observed the rapid regulatory changes that have already occurred. We should expect regulations and policies to continue to evolve and multiply, requiring insurers to become more sophisticated in their climate responses.

Consumers/Employees: As climate risk moves further into the spotlight, consumer behaviour and preferences are likely to evolve. As a younger generation more focused on climate risk moves into the workforce and/or insurance policy purchasing life stage, companies may need to do more to show their commitment on climate issues, as well as protect themselves against negative climate-related reputational impacts.



DO YOUR BEST, REMOVE THE REST

A key part of the Paris Agreement, the legally binding international treaty aimed at limiting global warming to 1.5 degrees Celsius as compared to pre-industrial levels, is to decrease GHG in the atmosphere, as these gases trap and re-emit heat, warming the earth. While GHG emissions come in several forms, carbon dioxide (CO₂) is often the most discussed given that it is the most common GHG emitted by human activities and therefore has the greatest climate impact.

The Paris Agreement brought with it perhaps the most publicized climate transition – that is the transition to a lower GHG producing economy. Given the focus on decreasing or offsetting emissions, it's no surprise that a major part of climate transition risk assessment has been centered on measuring carbon footprint or a quantification of carbon emitted.

Many companies have pledged to reach carbon neutrality (i.e., the amount of carbon emissions produced equals the amount removed from the atmosphere). Others have gone one step further by committing to net-zero, where emissions of all GHGs need to be abated as much as possible before considering removal or offsetting, hence the adage “do your best, remove the rest.”

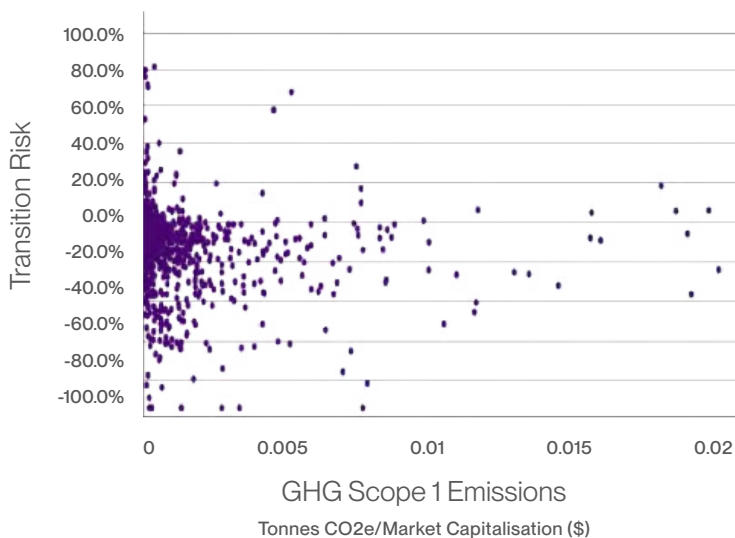


As low direct emitters, but significant investors and enablers in the market, all insurance companies' key area of focus should be carbon emissions of investment portfolios, in particular identifying, assessing and managing high carbon emitting assets. Property and casualty (P&C) insurers should also adopt a similar process with regards to high carbon emitting insureds among the risks they are underwriting. All insurers will need to establish decarbonization strategies ranging from exclusions to engagement, and impact investing and/or underwriting. Concretely, the Net Zero Insurance Alliance recently launched its [Target-Setting Protocol](#) which proposes different approaches to setting decarbonization goals for certain lines of business.

A NEED TO GO BEYOND CARBON

There are several limitations to carbon measuring. Limitations in data disclosure and variations in reporting metrics between companies mean there is a level of estimation and subjectivity involved. In particular, Scope 3 emissions – those that are not produced by a company itself, also known as financed or insured emissions – are not typically captured, although progress being made on emissions accounting standards should foster improvement. In addition, carbon measurements are a snapshot in time based on historical data, meaning they will inherently change and do not capture future expectations. Ultimately, emissions are an imperfect indicator of the extent to which portfolios are exposed to climate transition risk (Figure 1).

Figure 1
Emissions vs. Transition Risk



GHG emissions are indeed just one small piece of a large and complex puzzle. Assets could be impacted as a result of a diverse set of risks via economic transmission channels. Indeed, as climate risk is addressed more comprehensively, the nature of global transition will bring social and economic ramifications, beyond decarbonization. As no company will be immune from transition risks, and in order to identify emerging opportunities, insurers will need to develop forward-looking investment transition risk assessment approaches and capture the expected change in today's prices as a result of future transition risks.

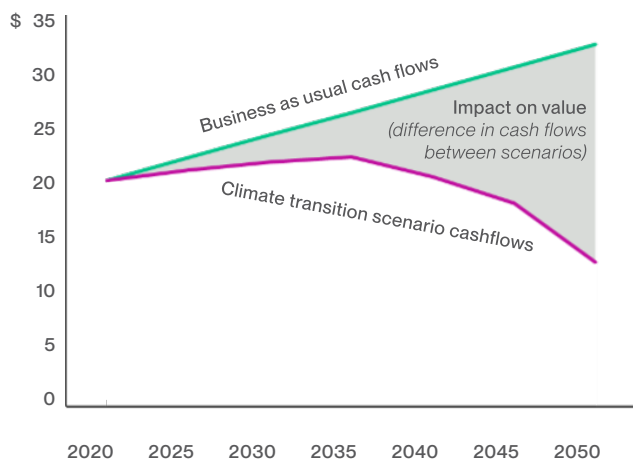
Source: Noss J. 2022. [Seeing through the smog: Towards a more robust measure of climate transition risk](#). WTW. p 4.



One approach uses financial modelling to measure potential impacts of transition to a low-carbon economy on the value of assets and portfolios by focusing on determining what expected future cashflows would look like under different climate transition scenarios (Figure 2). Such an approach could highlight, for instance, that a technology provider for the oil and gas industry is high risk, despite being a low emitter. Inversely, impacts can also be positive for companies with growth opportunities aligned with the climate transition.

Figure 2

Indicative predictive cashflows of a company facing negative impacts from climate transition



Similarly, a P&C insurer could adopt a bottom-up, forward-looking view of risks for its underwriting activities. As previously mentioned, as the transition unfolds, there will not only likely be sectoral shifts that could generate transition risks, liability risks and potential reputational damages, but also coverage gaps in certain areas of the economy which could create growth opportunities such as green infrastructure or carbon capture and storage technologies. Using this approach – based on climate transition controversies analysis – could be very practical to inform future strategies but could also prove very complex.

Alternatively, insurers could use higher level, top-down approaches to assess potential impacts of different transition scenarios on asset and liability management strategy (e.g., using publicly available scenarios to infer potential behaviour of an asset portfolio and estimate impacts on asset class returns over a medium to long-term horizon). While this would be a good approach to first get a sense of where risks and opportunities sit, it usually uses proxies which might not reflect a company's portfolio specifics.

Building capacity now

Either way, understanding and managing climate transition risk will be a multi-year journey. Challenges will include data quality and availability, increasing complexity of models, regulatory and disclosure requirements and enhancing expertise and technology. In addition, insurers will have to find an efficient way to integrate the work being done on climate transition into their business-as-usual processes.

Effectively though, a countdown to building internal knowledge on climate-related matters, in order to be able to respond to future requirements from their stakeholders, is on.

In our view, early adopters of transition plans, which could include portfolio alignment with net-zero goals, enhanced financial stewardship ambitions and forward-looking risk identification and mitigation approaches, will have a strategic advantage and be better positioned to seize the market opportunities that accompany climate transition.





Long COVID: Risk Outlook



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From early in the pandemic, many COVID-19 survivors reported experiencing a variety of symptoms many weeks and months after the acute infection phase. In this article, we discuss the various symptoms that comprise long COVID and potential risks to mortality and morbidity associated with it. We also discuss potential effects of repeat COVID-19 infection.

What is long COVID?

Long COVID, or post-acute sequelae of COVID-19, is officially defined in Canada as physical or psychological symptoms experienced for more than 12 weeks after the initial COVID-19 infection.¹ Long COVID symptoms are typically different from those experienced during the initial infection, and currently there are few objective tests to measure those reported.

1 Government of Canada. [Updated January 12, 2023]. [Post-COVID-19 condition \(long COVID\)](#). Ottawa (ON): Government of Canada.



Range of post-COVID sequelae

Long COVID is still an emerging condition with a limited evidence base. A crucial early step to begin to understand the condition is to create a fuller picture of its constellation of short-and long-term symptoms and their underlying pathophysiological mechanisms. A range of symptoms have been reported, although these vary in likely severity and duration (Figure 1). While there is no standardized way to cluster these symptoms, one approach is to group them by medical specialty.

The following are a set of distinct clusters:

- Neurological symptoms such as fatigue, brain fog, headache, changes to smell (anosmia or dysosmia) and delirium, and psychiatric symptoms such as depression and anxiety.
- Cardiorespiratory symptoms, including chest pain and severe shortness of breath.
- Systemic/inflammatory symptoms, including abdominal symptoms, myalgias, and changes in skin and hair.

Figure 1:

Percentage of long COVID symptoms from a global meta-analysis.










	Any symptom	80%
	Fatigue	58%
	Shortness of breath	24%
	Joint pain	19%
	Memory loss	16%
	Anxiety and depression	13%
	Pain	11%
	Sleep disorder	11%
	Reduced lung capacity	10%
	Stroke	3%
	Myocarditis	1%
	PTSD	1%

Figure 1: Percentage of long COVID symptoms from a global meta-analysis.

Source: Adapted from Lopez-Leon S, Wegman-Ostrosky T, Perelman C, Sepulveda R, Rebolledo PA, Cuapio A, Villapol S. 2021. "[More than 50 long-term effects of COVID-19: a systematic review and meta-analysis.](#)" Sci Rep. 11(16144). Figure 2, Long-term effects of COVID-19.



In addition to the symptoms in Figure 1, it is possible that COVID-19 infections may induce symptoms or diseases later in life that are secondary to the initial infection, due to subsequent organ or tissue injury.² Conditions include chronic obstructive pulmonary disease (COPD), myocardial infarctions and kidney disease. The impact of these longer-term conditions could range from minor to severe, and perhaps lead to an increase in diseases related to lung or kidney deterioration. There is some empirical evidence to estimate incidence or risk, so this would be an area to watch.

Long COVID causes and risk factors

Not everyone who recovers from a COVID-19 infection gets long COVID, and those who do get it do not necessarily experience it with the same severity or impact. Questions thus arise as to what causes the condition and which groups of people are more susceptible to it.

Recent studies suggest that patients with long COVID do not always fully clear the SARS-CoV-2 virus (the virus that causes COVID-19). Instead, the virus may persist in tissue (creating what is known as a viral reservoir), where it continues to provoke the immune system.³ This viral reservoir could drive a range of effects such as blood clotting, neuroinflammation and neuropathy. Acute COVID-19 may cause immune dysregulation, too. Recent studies show that it is possible that the virus causes injury to one or multiple organs.

Not only patients who developed severe acute COVID-19, but also those who experienced it mildly or were asymptomatic are at risk of long COVID.



- 2 Davis HE, McCorkell L, Moore Vogel J, Topol EJ. 2023. "[Long COVID: major findings, mechanisms and recommendations.](#)" Nat Rev Microbiol. 21: 133-146. Figure 1, Long COVID symptoms and the impacts on numerous organs with differing pathology.
- 3 [Long Covid Research Consortium \(LCRC\)](#) [website]. PolyBio Research Foundation.



Groups at higher risk of long COVID

It is likely that individual patients with long COVID diagnoses have different underlying biological factors driving their symptoms. The US Centers for Disease Control and Prevention has identified the following groups as more susceptible to long COVID:⁴

- People who were hospitalized or experienced more severe acute COVID-19, especially those who needed intensive care.
- People who had underlying health conditions prior to COVID-19.
- People who did not get a COVID-19 vaccine.
- People who experience multisystem inflammatory syndrome during or after acute COVID-19 infection.



Diagnoses and treatment options

There are presently no clear diagnoses or treatment options for long COVID. The presentation of pathologies is often overlapping, which makes the condition harder to diagnose and treat.⁴ While some diagnostic tools exist, these are largely restricted to respiratory ailments post-infection. Respiratory symptoms remain the main pathology that is examined for long COVID, though increasing evidence points to a range of other post-COVID residual symptoms. Currently, there is a lack of tests that can reliably diagnose the full range of symptoms, but improvements and developments are underway. Until a comprehensive suite of tests become the gold standard, long COVID will remain a clinically subjective condition.

As diagnosis improves, treatment options will also likely expand. Depending on the clinic, current approaches range from symptom management to psychological treatments, to respiratory training. The breadth of long COVID impairments has necessitated a large scope of interventions and treatment options. This comes at a time when, globally, healthcare resources (including availability of healthcare workers) are more limited due to the ongoing impact of COVID-19, together with the continuing burden of healthcare backlogs and the financial strain of poorer recent economic performance.

Many people recover from some long COVID symptoms in a short period of time (weeks to months), while other symptoms may linger for several years or cause an overall change in health. The true outcomes of long COVID will only start to be seen in the years to come.

4 Centers for Disease Control and Prevention. [Updated December 16, 2022]. [Long COVID or Post-COVID Conditions](#). Atlanta (GA): National Center for Immunization and Respiratory Diseases.



Potential impact of reinfections

Recent studies indicate that people with repeat COVID-19 infections are at higher risk of lung, heart and brain conditions.^{5,6} One of the major studies on repeat infection was based on the US Department of Veterans Affairs' national healthcare database, and therefore examined a subset of the US population that trends older than average and is not likely to share many demographic markers with the insured population.

The study examined approximately 500,000 veterans, 90% of whom were male, with a varied spectrum of vaccination status, exposure immunity and infection by different circulating variants, from March 2020 until April 2022. It found that compared to noninfected controls, the cumulative risk of long COVID appeared to increase relative to the number of repeat infections, although the exact relationship remains unclear. The evidence showed that reinfection, following an initial infection with the earliest variants of the SARS-CoV-2 virus, further increased the risk of death, hospitalization and sequelae in multiple organ systems in the acute and post-acute phase.

Further studies will be needed, as presentations of long COVID are wide ranging and change over time. There is uncertainty around the duration of these symptoms, and it is likely that repeat infection will continue to strengthen immunity against subsequent severe infections in healthy individuals, provided that newer variants are milder. This will of course need to be weighed up against the long-term risk of repeated infections as a trigger for long COVID.

Risks for insurers

As COVID-19 becomes endemic, it can be assumed that the vast majority of the population – vaccinated or not – would have contracted the virus at some point, and this would also hold true for the insured population. If the early studies prove true, the myriad of symptoms and potential for increased incidences of disease, future disease, long COVID and impacts on health from repeat infections are likely to increase the burden of disease for all populations. This in turn may lead to additional healthcare costs for society at large, and insurance companies could see associated developments in their portfolios.

Disability income

As reports of lingering COVID-19 effects began to emerge, private insurers braced themselves for an increase in disability income (DI) claims due to mental health conditions and long COVID-related musculoskeletal disorders. At present, from what we know, industry-wide material increases in the level of DI claims have not been reported, perhaps due in part to the following:

- The increased workplace flexibility that was made available during the pandemic, which may have allowed people to continue to work through some level of disability from home. Globally, the work-from-home culture that became mandatory during the pandemic (for the types of jobs that lent themselves to flexible working) has subsided more than was predicted, so this may not continue.

5 Washington University School of Medicine in St. Louis. [“Repeat COVID-19 infections increase risk of organ failure, death.”](#) [News release]. November 10, 2022.

6 Bowe B, Xie Y, Al-Aly Z. 2022. [“Acute and postacute sequelae associated with SARS-CoV-2 reinfection.”](#) Nat Med. 28: 2398-2405.



- The fact that long COVID symptoms may not have been sufficiently debilitating to trigger DI claims or long lasting enough to exceed waiting periods.

However, considering the symptoms, the risk remains that DI claims may become elevated as more people are diagnosed with long COVID. This is something to monitor.

Mortality and critical illness

Apart from the potential impact on DI, an equally concerning risk is the potential higher burden of cardiovascular, kidney and pulmonary disease, which could lead to an increase in both life insurance and critical illness/income protection claims. Many countries have recently experienced excess cardiovascular mortality and morbidity. While these could be misreported COVID-19 deaths, findings from recent studies indicate that at least some proportion of this increase could be due to post-COVID complications.⁷ Life and health insurers should continue to monitor this as they estimate mortality levels in the coming years.

Cautionary note on forward-looking statements

Certain statements and illustrations contained herein are forward-looking. These statements (including as to plans, objectives, targets and trends) and illustrations provide current expectations of future events based on certain assumptions and include any statement that does not directly relate to a historical fact or current fact. Further information on forward looking statements can be found in the terms of use section on Swiss Re's website.



RISK OUTLOOK

While there are many uncertainties relating to long COVID, the risk outlook remains elevated based on the available research to date. Additionally, several government healthcare agencies have reported an increase in excess mortality through early 2023, which continues to remain high compared to pre-pandemic levels. However, it can be reasonably expected that the relatively healthier portfolio of life and health insurers will mitigate impacts.

We are still in the early years since our first interaction with the SARS-COV-2 virus and our understanding of its long-term impacts, continues to evolve. As observation time increases and more studies are conducted, further insights into the lasting effects of long COVID on mortality and morbidity will assist in a clearer risk assessment and quantification of impacts. Until such time, practitioners in the insurance space may want to consider factoring these potential impacts into their risk outlook.

7 Raisi-Estabragh Z, Cooper J, Salih A, Raman B, Lee AM, Neubauer S, Harvey NC, Petersen SE. 2023. [“Cardiovascular disease and mortality sequelae of COVID-19 in the UK Biobank.”](#) Heart. 109(2): 119-126.





Managing Risks in Small- and Medium-Sized Retirement Plans



Author:
Peter Gorham, FCIA

Could you describe your pension plan's governance system in the next minute? No? You're not alone. And it means you likely have poor pension governance. If that hasn't caused you problems yet, it probably will sooner or later, unless you do something about it.

Fortunately, it's not too hard to fix and shouldn't require excessive time to do so.



All retirement savings plans come with risks for the employer, both as a sponsor and as the official Administrator.¹ Defined benefit plans, defined contribution plans, group RRSPs and all other types of plans come with risks. Most small- and medium-sized plan sponsors do little, if anything, to manage those risks, often believing it is beyond their ability and available time.

It doesn't have to be. The secret is to identify what you can manage with the skills and time available to you. Otherwise, you're exposed to unknown risks with unknown probability of occurring at an unknown cost.

You certainly don't need to "go all out" like large plans do. Large plans tend to face more risks with larger consequences than small and medium plans. And risk management is therefore easier for you. Much of it is just doing some basic due diligence – and keeping a record of it.

Ultimate responsibility

For most corporate-sponsored pension plans, the board of directors has ultimate responsibility for everything to do with the plan. Yet few boards know of that responsibility, or if they do know, they have no or little idea what's required. And the board probably thinks it has better things to address during their meetings than pensions.

Since the board will bear ultimate responsibility if something goes wrong, it's up to senior management to ensure the board is aware of what's happening and has an opportunity to ask questions. That can be effectively done by having a senior employee prepare a one-page update on the plan every six or 12 months. This could include things like funded position, contributions, pension expenses, rate of return on investments, status of regulatory filings, compliance with regulatory requirements, any recent issues, current risks and anything else the board may want to know or, perhaps more accurately, *ought to know* – all on one page, so they'll actually read it!



1 Herein, "Administrator" (capitalized) refers to the entity with the legal responsibility for administering the plan, while "administrator" (not capitalized) refers to the entity that is responsible for handling the day-to-day work. For most plans, the Administrator is the company acting through the board of directors. That's where the buck stops. An administrator may be an internal employee, a third party or both.



Administration risk

Most of the administration (record keeping, contribution remittance, benefit calculation, member communication) is likely outsourced to a third-party administrator. Yet you and the board are still responsible.

That third party relies on receiving timely communications from someone in your organization – regular updates on things like new hires, terminations, retirements, deaths and contributions. Ensure your staff have checklists for each of the events that require communication with the administrator. Have those employees complete a quarterly or semi-annual compliance report to be sent to a senior person summarizing the number of events that occurred, how many were handled on time and, for those that were late, the reason for the delay. This shouldn't be a huge report – just something you can quickly review and file to show the processes were done properly. And then set up a reminder so that if you don't receive a report on time, you can follow up. The most common cause of issues is a change in personnel. With quarterly reporting, problems can get caught before they become major.

Third-party supplier compliance

You also should know whether the third parties are doing their job correctly and on time. Every year, send each third-party service supplier a letter requesting a certification that they administered your plan in accordance with all plan terms and legislation and met all legislated time limits.

As part of that compliance statement, ask for a list of errors that were identified since the last compliance statement, the reason for them and how they were resolved. Periodically ask them to identify what they do to proactively identify any errors before a plan member points it out.

Will that prevent problems? No. Will everyone admit to their role in any failures? Probably not. But by reaching out, you'll have likely made it much more difficult for the administrator to deny responsibility for problems that may eventually arise.

Errors in pension administration will happen – it's a matter of when, not if. There's no economically feasible system that can catch all mistakes. The idea is to minimize their number, size and impact and to correct them as quickly as possible.

Investment risk

There are many different types of investment risk, and defined benefit plan sponsors can spend a lot of time worrying about and trying to mitigate them – probably with little payback. Make use of your investment advisor to address those risks and report annually on the main issues with recommendations. Unless you're an investment professional, trying to manage investment risk is likely an ineffective use of your time.

For defined benefit plans, you should at least request periodic reports of how your assets and liabilities (as well as pension expense) are related and how each will change as interest rates and other important factors change. If you don't like the answer, then request some options to consider for change.

For capital accumulation plans, you should understand which funds your members are investing in and whether each fund remains a viable option to offer members. This is where it can pay to have an independent investment consultant provide an annual report with recommendations should changes be appropriate.





Communication risk

An area often overlooked is communication, both internal and third party. It's critical that any updates to plan documents, member communications, collective agreements and other plan-related matters are retained in a single, safe place as well as provided to all necessary people. A checklist should be followed for every amendment to or creation of a document, including the required distribution list and any other documents that should be reviewed for a concurrent amendment.

External communication includes those materials sent to members, regulators, unions and others outside the organization. Annual, termination and retirement statements are the most frequent, but summary plan documents and periodic communications about pensions are also sent out and must be carefully vetted for accuracy, precision and comprehension. These are often used in litigation should something get challenged.

And retention is extremely important. Pension plan promises extend for decades, and all documentation should be retained for as long as a plan member might be alive – 100 years should normally be safe. Seven years is not enough, and pension law does not provide any limit.

Regulatory filings

After decades of accepting late filings with little consequence, regulators are starting to clamp down and levy fines and penalties. That is money you should never have to spend. Prepare a list of the recurring filing dates and the lead time required to complete the information. Your administrator or advisors can assist in identifying those dates. Make sure someone is responsible for getting each process started before it's too late, and then for reporting to a senior person when the filing is completed, whether it was done on time and if not, why not.

Summary

With a bit of time, you can establish individual responsibilities and reporting of compliance and any problems so you and the board can be kept current on the pension plan. The use of checklists in all functions will reduce the chance that you or someone else will forget to do something required.

While good governance is ideal, better governance is more easily achievable in a short time. The specific implementation should depend on the size and type of plan, the key risks faced and an assessment of the potential cost if something does go wrong.



Rent vs. Buy – A Personal Risk Management Framework



Author:
Joe Nunes, FCI

GIMME SHELTER

Securing shelter is a personal liability for most adults. Adults can typically find shelter by either renting or buying a home. Renting a home is a relatively simple transaction whereas buying one is a more complex process that includes an investment component. Some experts say that owning a home is a keystone of wealth, while others say that buying one today is a bad investment.

The goal of this commentary is to provide readers with a personal risk management framework to think about the rent vs. buy decision. With recent rapid changes in house prices, rents and interest rates this discussion might seem timely, although, the framework in this commentary is being developed as a tool to be used in any economic environment. In this discussion a home can mean a house, condominium or any other dwelling that is rented or owned by its residents.



CHOOSING AN INVESTMENT

The investment approach often used to determine the merits of a home as an investment is to compare the return that alternate investments would provide an investor compared to the expected return from home price appreciation, net of the cost of maintenance and property taxes. Each side of the equation needs adjusting for rent and mortgage payments. This approach can introduce biases by sellers of homes and sellers of other investments and is difficult to ensure that expected returns are properly adjusted for the risks being taken.

Since it is hard to predict the return on market investments or the appreciation of home prices over longer time horizons, an alternate approach to appraising the merits of buying a home as an investment is to compare the monthly cost of home ownership to the monthly cost of renting.

Consider a situation where an individual would like to buy a home that has a price of \$500,000. Although a down payment is always required, for simplicity assume that 100% of the purchase price comes from borrowed money. If the interest rate on the mortgage is 4% then the borrowing cost is \$20,000 per annum. Note that we don't consider the payment of principal in this calculation. Adding the cost of maintenance and taxes (estimated as 2%) increases the total cost by \$10,000 per annum, resulting in a total annual cost of \$30,000 or \$2,500 per month.

The simple solution at this point is to compare the \$2,500 per month cost of ownership to the current rate for renting a similar property. If homes that rent for \$2,500 per month are selling for \$750,000 then renting is a wise choice and if homes that are renting for \$2,500 per month are selling for \$250,000 then buying is most likely the better investment. The purpose of this calculation is not to provide an exact answer but simply to assist in identifying a tipping point where prices rise above or fall below a fair price compared to the cost of renting.

When considering the consequences of taxes, the jurisdiction of home ownership is material. In Canada, the appreciation in the price of a primary residence is not taxed. This tax advantage is one of the factors that can make home ownership look attractive when making comparisons. Finally, buying and selling a home comes with transaction costs such as realtor fees and moving expenses. Readers should be cautioned that these transaction costs can have a material impact on the investment return for home ownership, especially for shorter holding periods.



CHOOSING YOUR RISK

Although renting can seem advantageous at certain home price levels, ultimately landlords can be expected to desire a reasonable return on their investment. This means that in a rent-controlled home, landlords may seek to minimize the cost of maintenance and at some stage may sell the home so that a new owner can move into the home. This has the consequence of sending the tenant back to the rental market at what is likely to be higher rents. Where rent control measures are not in place, tenants are at the mercy of the changing rental market and would expect to see more immediate changes in rent commensurate with changing values of properties. Thus, home ownership becomes a natural hedge against the rising price of homes. When coupled with a long-term fixed mortgage, a homeowner can lock in housing costs for a period of many years. This predictability of costs can be valuable.

While owning a home provides a hedge against changing rental prices, homeowners who have a mortgage accept an interest rate risk if the interest rate guarantee is for a period shorter than the amortization period of the mortgage. Unfortunately, in Canada, most available mortgages have an interest rate guarantee of five years or fewer, while amortization periods are often 25 or 30 years. This mismatch between the rate guarantee period and the amortization period creates a risk that homeowners will not be able to renew their mortgage at affordable rates prior to building enough home equity.



Homeowners should weigh carefully the risk of rising interest rates in terms of the affordability of mortgage payments. Just because a bank will lend a homeowner a million dollars, it does not mean that the homeowner should borrow that much. Limiting borrowing to levels that can be comfortably paid off is a key component of risk management. Larger down payments and the utilization of what are now common mortgage pre-payment provisions increase a homeowner's equity and decrease the risk of unaffordable mortgage payments at the time a mortgage is renewed.

Finally, homeownership is intertwined in retirement savings. It is important for renters to understand the needed savings to fund post-retirement rent and homeowners need to be realistic about what level of home equity, if any, can be accessed in retirement.

In conclusion, we all need a place to live and looking at a home for its ability to satisfy this need on a cost-effective basis rather than looking at a home as an investment better focuses buyers on the costs and risks of renting vs. buying. Ultimately, renters are avoiding the risk of uncontrolled mortgage costs while homeowners are avoiding the risk of uncontrolled rents. In this regard each individual needs to consider which risk they can best manage, and which risk is best avoided.





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