

H2–Underwriting Risk Component and Managed Care Credit Calculation in the Health Risk-Based Capital Formula Report

Developed by the Health Underwriting
Risk Factors Analysis Work Group
of the American Academy of Actuaries



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**Final Report Letter to the National Association of Insurance
Commissioners' Health Risk-Based Capital (E) Working Group**

APRIL 2025

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Any references to current laws, regulations, or practice guidelines are correct as of the date of publication.

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Final Report Letter to the National Association of Insurance Commissioners' Health Risk-Based Capital (E) Working Group



April 24, 2025

Steve Drutz
Chairperson, Health Risk-Based Capital (E) Working Group
National Association of Insurance Commissioners (NAIC)

Re: Request for Comprehensive Review of the H2—Underwriting Risk Component and Managed Care Credit Calculation in the Health Risk-Based Capital Formula

Dear Chairperson Drutz,

On behalf of the Health Underwriting Risk Factors Analysis Work Group of the Health Solvency Subcommittee (Work Group) of the American Academy of Actuaries¹ (Academy), we appreciate this opportunity to provide this final report to the NAIC's Health Risk-Based Capital (E) Working Group (HRBCWG) in response to the request to comprehensively review the H2—Underwriting Risk component and the Managed Care Credit (MCC) calculation in the Health Risk-Based Capital (HRBC) formula.

If you have any questions related to this report, please contact Matthew Williams, the Academy's policy project manager for health (williams@actuary.org).

Sincerely,

Steve Guzski
Chairperson, Health Solvency Subcommittee
American Academy of Actuaries

Derek Skoog
Chairperson, Health Underwriting Risk Factors Analysis Work Group
American Academy of Actuaries

¹ The American Academy of Actuaries is a 20,000-member professional association whose mission is to serve the public and the U.S. actuarial profession. For 60 years, the Academy has assisted public policymakers on all levels by providing leadership, objective expertise, and actuarial advice on risk and financial security issues. The Academy also sets qualification, practice, and professionalism standards for actuaries in the United States.

Introduction, Findings, and Recommendations

In this report, the Work Group presents a review of the current H2—Underwriting Risk factors, as well as proposes enhancements to the calculation of Experience Fluctuation Risk, tiered Risk-Based Capital (RBC) risk factors, and the MCC. The analysis presented in this report is based on NAIC-provided reporting data evaluated through December 31, 2021.

For background and context, the Work Group's [January 2022 report](#) included six recommendations for the HRBC Working Group's consideration:

1. Refresh factors based on updated insurer data.
2. Develop factors at a more granular product level.
3. Develop factors specific to more relevant block sizes and consider an indexing factor for cut points to change over time.
4. Model risk factors over an NAIC-defined prospective time horizon with a defined safety level that can be refreshed regularly.
5. Refresh of MCC formula and factors to be more relevant and reflective of common contracting approaches and other risk factors associated with these contracting approaches.
6. Analyze long-term care insurance (LTCI) underwriting performance to create a more nuanced set of risk factors that considers pricing changes over time.

The Work Group's [July 2022 Letter](#) indicated that three "Work Tracks" would be needed to support recommendations 1-5 above. As for Recommendation #6, the Work Group will establish an additional Work Track after the delivery of this report and assemble the appropriate Academy LTCI subject matter experts.

The Work Tracks were:

- **Track 1:** HRBC XR013/XR014 (Experience Fluctuation Risk) Redesign
- **Track 2:** Develop Tiered-RBC Factors
- **Track 3:** Redesign HRBC Pages XR018/XR019 (MCC)

This final report describes the Work Group's analysis of those recommendations and the resulting findings. The decision to adopt any of the results presented in the report is the responsibility of the NAIC, after they determine the extent to which the results are aligned with the NAIC's philosophy on health risk and solvency.

Track 1: Findings and Recommendations

Consistent with the Work Group's initial recommendations, the Work Group recommends updating HRBC forms XR013/XR014 (Experience Fluctuation Risk) to better align with Page 7 (Analysis of Operations) of the Annual Statement by including columns for Comprehensive Individual, Comprehensive Group, Medicare, and Medicaid—as opposed to grouping these lines

of business as Comprehensive Major Medical (CMM). Additionally, the Work Group recommends the NAIC consider adjusting the risk calculation in two ways in the future, consistent with the structure of the Property and Casualty (P&C) premium risk calculation:

1. Display the risk factors in a manner that translates more closely to how the business is typically measured and managed (e.g., in claims and expense ratio-based terms); and
2. Utilize company-specific loss and expense ratio information to refine the risk calculation.

The Work Group has not prepared a recommendation for the use of a diversification credit at this time. In part, because there is currently an Academy project through our Property and Casualty Risk-Based Capital Committee for consideration to the NAIC's P&C RBC Working Group to evaluate the P&C's diversification credit. The Work Group recommends that the HRBC Working Group continue to evaluate the potential need for a diversification credit in health context in the future—particularly as the P&C formula refines its methodology.

Track 2: Findings and Recommendations

For tiered risk factors, the Work Group analyzed 10 years of reporting data from Health Annual Statements and RBC reporting to generate risk factors at various risk percentiles/safety levels and time horizons. The lines of business were expanded to be more granular and consistent with the current health insurance product landscape. In addition, premium tier cut-offs were increased, consistent with health trends and growth in the health economy since the 1990s.

The final generated tiered RBC risk factors were developed at multiple time horizons and risk percentiles/safety levels for review by the NAIC. The Work Group defers the ultimate categorization of line of business/market and selection of risk factors to the HRBCWG and other decision-makers, as the final judgment and selection of factors require several additional considerations (e.g., desired risk tolerance) that are outside the purview of this Work Group.

Below is a summary of results by market and premium tier for the 87.5th and 95th risk percentile/safety level and one-year time horizon. As an example, and for clarification, the risk factors at the 87.5th risk percentile/safety level correspond to losses modeled during the year after the RBC reporting period where 12.5% of companies are expected to have more adverse results:

Table 2.2
Claims Based Risk Factors, Gross of Managed Care Credit Factor and Aggregate
Adjustments and Rebalanced by Tier by Market (87.5th Percentile and 95th Percentile at
1-Year Time Horizon)²

Market	Percentile	Tier \$0 - \$10M	Tier \$10M - \$100M	Tier \$100M and above
Comprehensive - Group \$0-\$100M, \$100M+	87.5	0.251	0.251	0.048
	95.0	0.406	0.406	0.083
Comprehensive - Individual \$0-\$100M, \$100M+	87.5	0.247	0.247	0.138
	95.0	0.454	0.454	0.175
Medicaid \$0-\$100M, \$100M+	87.5	0.083	0.083	0.083
	95.0	0.148	0.148	0.148
Medicare Supplemental \$0-\$10M, \$10M+	87.5	0.369	0.005	0.005
	95.0	0.629	0.081	0.081
Medicare Advantage \$0-\$100M, \$100M+	87.5	0.296	0.296	0.044
	95.0	0.456	0.456	0.106
Stand-alone Part D \$0-\$100M, \$100M+	87.5	0.267	0.267	0.060
	95.0	0.477	0.477	0.093
Dental \$0-\$10M, \$10M+	87.5	0.164	0.011	0.011
	95.0	0.311	0.096	0.096
Vision \$0-\$10M, \$10M+	87.5	0.094	-0.057	-0.057
	95.0	0.303	0.016	0.016
Other Health N/A	N/A	0.130	0.130	0.130
Other Non-Health N/A	N/A	0.130	0.130	0.130

Note: Values shown for Medicaid reflect an aggregated tier across all revenue levels and thereby use a common value for credibility purposes. This is discussed further in section "Discussion: Proposed Methodology—Factor Output" on page 24.

² Note: Risk factors are applied progressively based on the annual revenue in the line of business. For example, a company with \$400M Medicare Advantage business would have a contribution to H2 risk of $0.296 \times (\$100M) + 0.044 \times (\$400M - \$100M) = \$42.8M$. N.B. N.B. This table appears here because it is referenced in the text here. It is repeated later also.

Track 3: Findings and Recommendations

Finally, with respect to HRBC XR018/XR019 (MCC) redesign, the nature of insurer/provider relationships has evolved significantly over the past 25 years since the existing categories were developed. While fee-for-service payments are still common, there has been a significant increase in risk-sharing arrangements, particularly for government (i.e., Medicare and Medicaid) lines of business. As well, insurance carriers have continued to move providers toward risk-based and value-based contracts as providers' risk tolerances have grown. Frequently, this has led to improvements in member medical management and increasing insurer predictability of claims costs.

As a result, the Work Group found that the existing MCC categories are not sufficiently detailed. The Work Group proposes changes to Exhibit 7 – Part 1 – Summary of Transactions with Providers that takes into account emerging provider contracting approaches. The Work Group plans to study the impact these arrangements have on claim volatility in future years to develop a revised MCC methodology.

Next Steps

Immediate next steps, contingent on the NAIC HRBCWG's approval, include measuring Line of Business (LOB) and company-specific impact analysis of results, determining the cadence of future risk factor and MCC updates (the Work Group proposes a five-year review cycle), proposing a timeline to produce revised MCC methodology, and assembling a future Academy LTCI Work Track to address Recommendation #6

Track 1: HRBC XR013/XR014 (Experience Fluctuation Risk) Redesign

The Work Group recommends updating HRBC XR013/XR014 (Experience Fluctuation Risk) to better align with Page 7 (Analysis of Operations) of the Annual Statement, by including columns for Comprehensive Individual, Comprehensive Group, Medicare, and Medicaid—as opposed to grouping these lines of business together as CMM. After adjusting the exhibit, the columns—and unique underwriting risk factors and calculations—would be:

- Comprehensive Individual (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
- Comprehensive Group (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
- Medicare Supplement
- Vision Only (currently within *Dental & Vision* combined)
- Dental Only (currently within *Dental & Vision* combined)
- Title XVIII-Medicare (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
- Title XIX-Medicaid (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
- Stand-Alone Medicare Part D
- Other Health³
- Other Non-Health⁴

Beyond the additional columns, the Work Group also recommends simplifying the Alternative Risk Charge calculation by removing the “Maximum Individual Risk” component of the filing, resulting in only the flat dollar amount. Additionally, the fixed dollar amount Alternative Risk Charge can be included directly in the Experience Fluctuation Risk calculation table and removed from the bottom of XR013. The current Alternative Risk Charge calculation, shown in Table 1.1, is the lesser of a fixed amount per LOB and two-to-six times the Maximum Individual Risk for each column. Generally, the Alternative Risk Charge applies for small lines of business for which the base risk charge is low given low premium volume.

³ Note: This Work Group did not analyze the Other Health and Other Non-Health lines of business, from Page 7 of the Annual Statement other than Stand-Alone Medicare Part D.

⁴ This Work Group did not analyze the Other Health and Other Non-Health lines of business, from Page 7 of the Annual Statement other than Stand-Alone Medicare Part D.

Table 1.1

UNDERWRITING RISK

Experience Fluctuation Risk

		1	2	3	4	5	(6)	(7)
	Line of Business	Comprehensive Medical	Medicare Supplement	Dental & Vision	Stand-Alone Medicare Part D Coverage	Other Health	Other Non-Health	Total
(1)	† Premium							0
(2)	† Title XVIII-Medicare		XXX	XXX	XXX	XXX	XXX	0
(3)	† Title XIX-Medicaid		XXX	XXX	XXX	XXX	XXX	0
(4)	† Other Health Risk Revenue		XXX				XXX	0
(5)	Medicaid Pass-Through Payments Reported as Premiums		XXX	XXX	XXX	XXX	XXX	0
(6)	Underwriting Risk Revenue = Lines (1) + (2) + (3) + (4) - (5)	0	0	0	0	0	0	0
(7)	† Net Incurred Claims						XXX	0
(8)	Medicaid Pass-Through Payments Reported as Claims		XXX	XXX	XXX	XXX	XXX	0
(9)	Total Net Incurred Claims Less Medicaid Pass-Through Payments Reported as Claims = Lines (7) - (8)	0	0	0	0	0	XXX	0
(10)	† Fee-For-Service Offset		XXX				XXX	0
(11)	Underwriting Risk Incurred Claims = Lines (9) - (10)	0	0	0	0	0	XXX	0
(12)	Underwriting Risk Claims Ratio = For Column (1) through (5), Lines (11)/(6)	0.0000	0.0000	0.0000	0.000	0.000	1.000	XXX
(13)	Underwriting Risk Factor*	0.1493	0.1043	0.1195	0.251	0.130	0.130	XXX
(14)	Base Underwriting Risk RBC = Lines (6) x (12) x (13)	0	0	0	0	0	0	0
(15)	Managed Care Discount Factor	1.0000	1.0000	1.0000	1.000	1.000	XXX	XXX
(16)	RBC After Managed Care Discount = Lines (14) x (15)	0	0	0	0	0	XXX	0
(17)	† Maximum Per-Individual Risk after Reinsurance						XXX	XXX
(18)	Alternate Risk Charge **	0	0	0	0	0	XXX	XXX
(19)	Alternate Risk Adjustment	0	0	0	0	0	XXX	XXX
(20)	Net Alternate Risk Charge***	0	0	0	0	0	XXX	0
(21)	Net Underwriting Risk RBC (MAX{Line (16), Line (20)}) for Columns (1) through (5), Column (6), Line (14)	0	0	0	0	0	0	0

TIERED RBC FACTORS *						
	Comprehensive Medical	Medicare Supplement	Dental & Vision	Stand-Alone Medicare Part D Coverage	Other Health	Other Non-Health
\$0 - \$3 Million	0.1493	0.1043	0.1195	0.251	0.130	0.130
\$3 - \$25 Million	0.1493	0.0663	0.0755	0.251	0.130	0.130
Over \$25 Million	0.0893	0.0663	0.0755	0.151	0.130	0.130
ALTERNATE RISK CHARGE**						
**The Line (18) Alternate Risk Charge is calculated as follows:						
LESSER OF:	1,500,000 or 2 x Maximum Individual Risk	50,000 or 2 x Maximum Individual Risk	50,000 or 2 x Maximum Individual Risk	150,000 or 6 x Maximum Individual Risk	50,000 or 2 x Maximum Individual Risk	N/A

† The Annual Statement Sources are found on page XR014

* This column is for a single result for the Comprehensive Medical & Hospital, Medicare Supplement and Dental/Vision managed care discount factor.

*** Limited to the largest of the applicable alternate risk adjustments, prorated if necessary.

The Maximum Individual Risk component is the maximum after-reinsurance loss for any single individual (i.e., the highest attachment point on any stop-loss reinsurance). Based on the Work Group's analysis and discussed further in the following sections, the smallest entities generally take on outsized experience fluctuation risk. As a result, it is not clear that the two-to-six times multiple of individual risk is a good indicator of experience fluctuation risk.

Table 1.2: XR013 Underwriting Risk—Recommended Template

Experience Fluctuation Risk		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Line of Business	Comprehensive Individual	Comprehensive Group	Medicare Supplement	Vision Only	Dental Only	Title XVIII-Medicare	Title XIX-Medicaid	Stand-Alone Medicare Part D Coverage	Other Health	Other Non-Health	Total
(1)	† Premium											0
(2)	† Other Health Risk Revenue											0
(3)	Medicaid Pass-Through Payments Reported as Premiums	XXX	XXX	XXX	XXX	XXX	XXX		XXX	XXX	XXX	0
(4)	Underwriting Risk Revenue = Lines (1) + (2) - (3)	0	0	0	0	0	0	0	0	0	0	0
(5)	† Net Incurred Claims											0
(6)	Medicaid Pass-Through Payments Reported as Claims	XXX	XXX	XXX	XXX	XXX	XXX		XXX	XXX	XXX	0
(7)	† Fee-For-Service Offset											0
(8)	Underwriting Risk Incurred Claims = Lines (5) - (6) - (7)	0	0	0	0	0	0	0	0	0	0	0
(9)	Underwriting Risk Claims Ratio = Lines (8)/(4)	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	XXX
(10.1)	Underwriting Risk Factor for Initial Amounts Of Premium‡											
(10.2)	Underwriting Risk Factor for Excess of Initial Amount‡											
(10.3)	Composite Underwriting Risk Factor	0.1493	0.1493	0.1493	0.1493	0.1493	0.1493	0.1493	0.1493	0.1493	0.1493	XXX
(11)	Base Underwriting Risk RBC = Lines (4) x (9) x (10.3)	0	0	0	0	0	0	0	0	0	0	0
(12)	Managed Care Discount Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	XXX	XXX
(13)	RBC After Managed Care Discount = Lines (11) x (12)	0	0	0	0	0	0	0	0	0	XXX	0
(14)	Alternate Risk Charge **	0	0	0	0	0	0	0	0	0	XXX	XXX
(15)	Net Underwriting Risk RBC (MAX{Line (13), Line (14)})	0	0	0	0	0	0	0	0	0	0	0

† The Annual Statement Sources are found on page XR014

* This column is for a single result for the Comprehensive Medical & Hospital, Medicare Supplement and Dental/Vision managed care discount factor.

*** Limited to the largest of the applicable alternate risk adjustments, prorated if necessary.

‡ For Comprehensive Medical the Initial Premium Amount is \$25,000,000 or the amount in Line (1.3) if smaller. For Medicare Supplement and Dental & Vision the Initial Premium Amount is \$3,000,000 or the amount in Line (1.3) if smaller. For Stand-Alone Medicare Part D the Initial Premium Amount is \$25,000,000 or the amount in Line (1.3) if smaller.

Impacts to Non-Health Filers

Within the Life and P&C RBC reports, the Work Group recommends making similar changes. Namely:

- LR019 Changes
 - Remove the Individual versus Group distinction and consolidate the two sections into one.
 - Replace the “Usual and Customary Major Medical and Hospital” row with rows for:
 - Comprehensive Individual
 - Comprehensive Group
 - Title XVIII-Medicare
 - Title XIX-Medicaid
 - Replace the current row related to Dental and Vision with two rows—one for Dental and one for Vision.
- LR020 Changes
 - Replace the Comprehensive Medical column with four columns for:
 - Comprehensive Individual
 - Comprehensive Group
 - Title XVIII-Medicare
 - Title XIX-Medicaid
 - Replace the current column for Dental & Vision with two columns—one for Dental and one for Vision.
 - Remove the rows related to Individual and Group Premium and link the Premium Total to Page 019.
 - Remove the Medicare and Medicaid rows.
 - Remove the RBC Adjustment for Individual.
 - Remove the Maximum Per-Individual calculation.
 - Replace the Alternate Risk Charges with the fixed dollar values.

Additionally, while the draft pages that follow include sourcing of Premium and Claim data that is consistent with historical practice, the NAIC should consider utilizing Underwriting and Investment Exhibit Parts 1 and 2. While this would likely not be a meaningful change to the results, it would allow for clearer and more direct sourcing than Schedule H.

Table 1.3: Health Premiums—LR019 Changes

HEALTH PREMIUMS PR019/LR019

		(1)		(2)	
		Statement		RBC	
		Value		Requirement	
			Factor		
<u>Medical Insurance Premiums</u>		<u>Annual Statement Source</u>			
(1)	Comprehensive Individual	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	†	XXX
(2)	Comprehensive Group	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	†	XXX
(3)	Medicare Supplement	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	†	XXX
(4)	Vision Only	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	†	XXX
(5)	Dental Only	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	†	XXX
(6)	Title XVIII-Medicare	Earned Premium (Schedule H Part 1 Line 2 in part)		†	XXX
(7)	Title XIX-Medicaid	Earned Premium (Schedule H Part 1 Line 2 in part)		†	XXX
(8)	Medicaid Pass-Through Payments Reported as Premium	Company Records	\$0	†	XXX
(9)	Stand-Alone Medicare Part D Coverage	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	†	XXX
(10)	Supplemental benefits within Stand-Alone Part D Coverage (Claims Incurred)	Company Records	\$0	X	0.500 = \$0
(11)	Hospital Indemnity and Specified Disease	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	X	* = \$0
(12)	AD&D (Maximum Retained Risk Per Life	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	X	‡ = \$0
(13)	Other Accident	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	X	0.050 = \$0
(14)	Stop Loss and Minimum Premium	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	X	¥ = \$0
(15)	Federal Employee Health Benefit Plan	Earned Premium (Schedule H Part 1 Line 2 in part)	\$0	X	0.000 = \$0

Table 1.4: Underwriting Risk—Premium Risk for Comprehensive Medical, Medicare Supplement, and Dental & Vision—LR020 Changes

UNDERWRITING RISK - PREMIUM RISK FOR COMPREHENSIVE MEDICAL, MEDICARE SUPPLEMENT AND DENTAL & VISION PR020

(Experience Fluctuation Risk in Life RBC Formula)

	(1) Comprehensive Individual	(2) Comprehensive Group	(3) Medicare Supplement	(4) Vision Only	(5) Dental Only	(6) Title XVIII-Medicare	(7) Title XIX-Medicaid	(8) Stand-Alone Medicare Part D Coverage	(9) TOTAL
Line of Business									
(1) Premium									0
(4) Other Health Risk Revenue†			XXX						0
(5) Underwriting Risk Revenue = Lines (1) + (2) + (3) + (4)									0
(6) Net Incurred Claims									0
(7) Fee-for-Service Offset†			XXX						0
(8) Underwriting Risk Incurred Claims = Line (6) – Line (7)									0
(9) Underwriting Risk Claims Ratio = Line (8) / Line (5)									XXX
(10.1) Underwriting Risk Factor for Initial Amounts Of Premium‡									XXX
(10.2) Underwriting Risk Factor for Excess of Initial Amount‡									XXX
(10.3) Composite Underwriting Risk Factor									XXX
(11) Base Underwriting Risk RBC = Line (5) x Line (9) x Line (10.3)									0
(12) Managed Care Discount Factor = PR021 Line (12)									XXX
(13) Base RBC After Managed Care Discount = Line (11) x Line (12)									0
(14) Alternate Risk Charge	1,500,000	1,500,000	50,000	50,000	50,000	1,500,000	1,500,000	150,000	0
(15) Net Underwriting Risk RBC (Maximum of Line (13) or Line (14))									0

† Source is company records unless already included in premiums.

‡ For Comprehensive Medical the Initial Premium Amount is \$25,000,000 or the amount in Line (1.3) if smaller. For Medicare Supplement and Dental & Vision the Initial Premium Amount is \$3,000,000 or the amount in Line (1.3) if smaller. For Stand-Alone Medicare Part D the Initial Premium Amount is \$25,000,000 or the amount in Line (1.3) if smaller.

§ Formula applies only to Column (1), for all other columns Line (14) should equal Line (13).

£ Applicable only if Line (16) for a column equals Line (16) for Column (5), otherwise zero.

Denotes items that must be manually entered on the filing software.

Future Structural Changes for the NAIC's Consideration

The Work Group recommends that the NAIC, after considering implementing the previous changes to the experience fluctuation risk calculation, consider studying further changes over time that may better reflect experience fluctuation risk.

First, the Work Group recommends adjusting the risk factors to display and apply them in a manner that translates more closely to how the business is measured and managed (i.e., in loss and combined ratio terms). To accomplish this, loss ratios at the desired safety level paired with actual administrative cost ratios could generate a combined ratio and an implied level of losses. This would then need to be studied in relation to business risk-related administrative cost risk factors.

Second, the Work Group recommends studying company-specific loss ratio and expense information to refine the risk calculation. This could better reflect the underlying performance and risk of the block. For example, a health filer that has historically run higher loss ratios than the industry may be more likely to run higher losses in the future—which may merit a higher risk charge. The converse is also true. By also incorporating company-specific administrative expense information, the filer's combined ratio can be utilized to better reflect the real risk of experience fluctuation. The combined ratio could be blended with the industry data (e.g., using an average similar to the P&C formula) to refine the risk factor.

While historical data detail is not available for all the lines of business from Page 7 (Analysis of Operations) of the Annual Statement, the grand total of the Exhibit of Premiums, Enrollment, and Utilization, can be utilized for the Individual and Group segments, which have reported the delineation historically.

To apply this adjustment, the company's historical data would need to be summarized to calculate loss ratios by year, adjusting for aberrantly high loss ratios and for time periods during which the block of business was significantly smaller than average. Generally consistent with the P&C approach, for each LOB, an average of a company's loss ratio for a relevant time period (e.g., the most recent 10 years) could be used, depending on the LOB.

The Work Group recommends that the HRBC Working Group continue to evaluate the potential need for diversification credit in the future—particularly as the P&C formula refines its methodology.

Track 2: Tiered RBC Factor Development

Background, Prior Research, and Reports

As the Work Group mentioned in the [January 2022 report](#):

In the early 1990s, the Academy fulfilled a request from the NAIC to assist in the development of a risk-based capital formula - similar to those in place for Life Insurers and P&C Insurers - that could be applied to a variety of traditional and nontraditional risk-assuming enterprises in the health insurance space.

To develop the original H2 (underwriting risk) component of the HRBC formula, the Academy employed statistical modeling based on health insurance and provider data available at that time. Stochastic modeling was performed using a five-year modeling time horizon, and formulas and factors were developed to calculate capital levels that allowed each product to remain solvent in 95% of the modeled scenarios. Ultimately, the original modeling was used to develop relative risk values (RVs) for most lines of business which would be referenced by the NAIC to establish risk factors, based on the NAIC's risk tolerance.

Since the original development of the H2 component of the HRBC formula, the Work Group is aware of only two material changes to the structure and methodology of in-scope lines of business (or "markets") bringing it to its current state:

1. The inclusion of the Stand-Alone Medicare Part D coverage into the factor structure in 2006, where factors were based upon actuarial judgement.⁵
2. The introduction of investment income-adjusted risk factors in 2021.⁶

Current H2 Factor Structure/Methodology

As was previously discussed, the current H2 formula leverages risk factors that were developed approximately 30 years ago. Risk factors applied in the experience fluctuation risk formula on page XR013 are staged for six general lines of business/markets:

1. Comprehensive Medical & Hospital—including Comprehensive, Comprehensive Health Insurance, Medicare Advantage, and Medicaid, all applied in column (1)
2. Medicare Supplement—column (2)
3. Dental and Vision—column (3)
4. Stand-Alone Medicare Part D Coverage—column (4)
5. Other Health Coverages - column (5)
6. Other Non-Health Coverages—column (6)

⁵ American Academy of Actuaries, "[SMI RBC Report](#)," January 2021.

⁶ American Academy of Actuaries, "[Request for Analysis to Incorporate Investment Income into the Underwriting Risk Component of the Health Risk-Based Capital Formula](#)," February 2021.

The risk factors apply to annual revenue and claim expense amounts from the Health Annual Statement Page 7 (Analysis of Operations)⁷.

For each LOB, risk factors are applied to the reported incurred claims for the reporting entity, sourced from the Annual Statement. The risk factors are the same for all reporting entities and generally decrease as the premiums for a particular LOB increase. Applying the risk factors to the estimated incurred claims generates Base Underwriting Risk RBC. The Underwriting Risk Factors by premium tier for the 2022 reporting year are as follows in Table 2.1:

Table 2.1: Compilation of 2022 Underwriting Risk Factors (Prior to Investment Income Adjustment)^{8,9}

Market	Tier \$0 - \$3M	Tier \$3M - \$25M	Tier \$25M and above
Comprehensive Hospital & Medical \$0-\$25M, \$25M+	0.150	0.150	0.090
Medicare Supplement \$0-\$3M, \$3M+	0.105	0.067	0.067
Dental and Vision \$0-\$3M, \$3M+	0.120	0.076	0.076
Stand-Alone Medicare Part D Coverage \$0-\$25M, \$25M+	0.251	0.251	0.151
Other Health N/A	0.130	0.130	0.130
Other Non-Health N/A	0.130	0.130	0.130

To the Work Group's knowledge, aside from the investment income adjustment, there have been no changes to the risk factors or premium-tier cut-points (i.e., upper and lower bounds) since the inception of the original HRBC Formula.

Proposed Methodology - Factor Summary

As previously mentioned, the Work Group engaged in an empirical analysis involving 10 years of Health Annual Statement data to develop risk factors across multiple time horizons (one to five years) and safety levels (i.e., risk percentiles/safety levels). Note that changes in Risk Factors are not representative of the change in RBC value for any particular company, as the Risk Factor

⁷ See the formal crosswalk of values on Health Annual Statement's Page 7 to columns of RBC report page XR014. Of note, comprehensive (hospital and medical) insurance for individual (Column 2) and group (Column 3), Title XVIII Medicare (Column 8), Title XIX Medicaid (Column 9) are aggregated for the Comprehensive risk factor. Vision (Column 5) and Dental (Column 6) are grouped for a combined Dental and Vision risk factor. Stand-alone Part D is carved out of Medicare and used with the separate risk factor on XR013. Federal Employees Health Benefits (FEHB) business is treated separately on Page XR015, Row 24.

⁸ To facilitate comparison, the investment income yield adjustment was removed from the Comprehensive Medical & Hospital, Medicare Supplement and Dental & Vision lines of business. As such, the factors in this report will not tie to the factors published in the 2022 NAIC Health Risk-Based Capital Report Including Forecasting and Instructions for Companies.

⁹ Note: Risk factors are applied progressively based on the annual revenue in the line of business. For example, a company with \$400M Medicare Advantage business (within the Comprehensive Hospital & Medical category) would have a contribution to H2 risk of $0.150 \times (\$25M) + 0.090 \times (\$400M - \$25M) = \$37.5M$.

does not include all elements of the RBC Formula and distribution of premium by LOB differs widely among companies.

Consistent with the NAIC's desire to develop factors at a more granular product level, risk factors now exist for 10 general lines of business/markets:

1. Comprehensive—Group (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
2. Comprehensive—Individual (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
3. Medicaid (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
4. Medicare Supplement
5. Medicare Advantage (currently within *Comprehensive (Hospital & Medical) Individual and Group*)
6. Medicare Stand-Alone Part D
7. Dental (currently within *Dental and Vision combined*)
8. Vision (currently within *Dental and Vision combined*)
9. *Other Health*
10. *Other Non-Health*

These factors would expand upon the list currently on Page XR013 within the Health Risk-Based Capital Report.¹⁰

The Work Group did not analyze the *Other Health* and *Other Non-Health* lines as they were viewed as out of scope. As such, no analysis or judgement was rendered on the risk factor currently in place for these lines (the current value is 0.130). Please note there is a separate AAA Stop-Loss Work Group that is developing an update to the NAIC's RBC factors for medical stop loss.

Below, in Table 2.2, is a summary of results by Market and Premium Tier at the 87.5th and 95th risk percentile/safety level and one-year time horizon:

¹⁰ Comprehensive (Hospital & Medical) would be split into separate factors for Comprehensive – Group, Comprehensive – Individual, Medicaid, and Medicare Advantage; Medicare Supplement and Stand Alone Part D would continue to have separate factors; Dental & Vision would be split into separate factors for Dental and for Vision; finally, Other Health and Other Non-Health would continue to have their own factors.

Table 2.2: Claims Based Risk Factors, Gross of Managed Care Credit Factor and Aggregate Adjustments and Rebalanced by Tier by Market (87.5th Percentile and 95th Percentile at 1-Year Time Horizon) ¹¹

Market	Percentile	Tier \$0 - \$10M	Tier \$10M - \$100M	Tier \$100M and above
Comprehensive - Group \$0-\$100M, \$100M+	87.5	0.251	0.251	0.048
	95.0	0.406	0.406	0.083
Comprehensive - Individual \$0-\$100M, \$100M+	87.5	0.247	0.247	0.138
	95.0	0.454	0.454	0.175
Medicaid \$0-\$100M, \$100M+	87.5	0.083	0.083	0.083
	95.0	0.148	0.148	0.148
Medicare Supplemental \$0-\$10M, \$10M+	87.5	0.369	0.005	0.005
	95.0	0.629	0.081	0.081
Medicare Advantage \$0-\$100M, \$100M+	87.5	0.296	0.296	0.044
	95.0	0.456	0.456	0.106
Stand-alone Part D \$0-\$100M, \$100M+	87.5	0.267	0.267	0.060
	95.0	0.477	0.477	0.093
Dental \$0-\$10M, \$10M+	87.5	0.164	0.011	0.011
	95.0	0.311	0.096	0.096
Vision \$0-\$10M, \$10M+	87.5	0.094	-0.057	-0.057
	95.0	0.303	0.016	0.016
Other Health N/A	N/A	0.130	0.130	0.130
Other Non-Health N/A	N/A	0.130	0.130	0.130

The risk factors at the 87.5th risk percentile/safety level correspond to losses modeled during the year after the RBC reporting period where 12.5% of companies are expected to have more adverse results.

Appendices 2.B.1 through 2.B.3, and Exhibits A1 through A3, within this report document some of the high-level adjustments made in the calculation of these factors. The appendices show the statistical results for other risk percentiles/safety levels and horizons. In addition, Appendices 2.C.1 through 2.C.3 show a step-through of the factor calculations for three cells:

- Comprehensive - Group, 87.5th risk percentile/safety level, 1-year horizon
- Medicaid, 87.5th risk percentile/safety level, 1-year horizon
- Dental, 87.5th risk percentile/safety level, 1-year horizon

¹¹ Note: Risk factors are applied progressively based on the annual revenue in the line of business. For example, a company with \$400M Medicare Advantage business would have a contribution to H2 risk of $0.296 \times (\$100M) + 0.044 \times (\$400M - \$100M) = \$42.8M$.

In addition to spreadsheet versions of the .pdf appendices, an interactive step-through of the calculation and application is provided in the embedded .xlsx file.¹²

The remainder of this section will discuss the data, methods, assumptions, procedures, and considerations, which contributed to the Work Group’s factor development.

Proposed Methodology—Data Compilation

Data was provided by the NAIC for the reporting years of 2012-2021 (a 10-year period) to conduct the revised factor analysis. The Work Group obtained the data used in analyses from:

- Annual Statements, Accident and Health Policy Experience Exhibit, for the years 2012 – 2021;
- Annual Statements, Analysis of Operations By Lines of Business, for the years 2012 – 2021;¹³ and
- Annual Statements, Exhibit of Premiums, Enrollment and Utilization, for the years 2012 – 2021.

Additionally, for purposes of normalizing the claims-based risk factor for the effects of the managed care discount factor, the NAIC provided:

- Exhibit 7 – Part 1 – Summary of Transactions with Providers information from Lines 1-17, Column 1, for the years 2012 – 2021.

Table 2.3, below, indicates the primary data source for risk factor development, by Market:

Table 2.3: Primary Data Sources for Risk Factor Development, by Market

LOB/Market	Data Source for Risk Factor Development
Comprehensive—Individual	Exhibit of Premiums, Enrollment and Utilization & Analysis of Operations By Lines of Business
Comprehensive—Group	Exhibit of Premiums, Enrollment and Utilization & Analysis of Operations By Lines of Business
Medicaid	Analysis of Operations By Lines of Business
Medicare Supplement	Analysis of Operations By Lines of Business
Medicare Advantage	Analysis of Operations By Lines of Business
Medicare Stand-Alone Part D	Accident and Health Policy Experience Exhibit & Analysis of Operations By Lines of Business
Dental	Analysis of Operations By Lines of Business
Vision	Analysis of Operations By Lines of Business

¹² See the section at the end of this report, “Additional Appendices Included in the Embedded Excel Workbook.”

¹³ In a quota share reinsurance agreement, the ceding insurer transfers a fixed percentage of its premiums and losses to the reinsurer. This transfer effectively moves the ceded portion of revenue and claims off the insurer’s books, impacting the Analysis of Operations (ANOPS) by reducing both the income and expenses associated with the ceded policies.

The data used in the analysis includes entities that filed the exhibits above in their Annual Health Statutory Financial Statements (i.e., the Orange Blank). To the extent an entity writes the specified lines of business above and does not file these specified exhibits above (e.g., a life company that does not file an Orange Blank), that company-specific experience would not be included in this analysis.

As noted above, in select markets, experience data was needed at a more granular level than was available in the Analysis of Operations by LOB data. In particular, Comprehensive—Group, Comprehensive—Individual, and Medicare Stand-Alone Part D required additional processes to refine the data needed for risk analysis:

- For Comprehensive—Individual and Comprehensive-Group, Revenue and Claims were segmented using the Exhibit of Premiums, Enrollment and Utilization data, using health premiums earned (Line 15) and amount incurred for provision of health care services (Line 18). These values are tied back to combined amounts on the Analysis of Operations by LOB page for almost every company (i.e., Line 7 and Line 15). The Net Reinsurance Recoveries are reported for Comprehensive in total (Individual and Group) on the Analysis of Operations by LOB page Line 16, and this was allocated to individual and group so that the net amount would tie to Line 17 (Total Hospital and Medical). Overall admin for the Comprehensive LOB, according to the Analysis of Operations by LOB page, is then allocated to individual vs. group based on their respective revenue levels.
- For Medicare Stand-Alone Part D, Revenue and Claims were sourced from the Accident and Health Policy Experience Exhibit data, using Direct Earned Premium (Column 1), the sum of Direct Incurred Claims (Column 2), and the Change in Contract Reserves (Column 3).

In situations where operating margin was not available to be calculated for a particular LOB/market, a reasonable assumption for expected margin/combined ratio was made by using data available for the higher-level LOB for which that data was available in the Analysis of Operations data (e.g., Comprehensive Revenue and Total Deductions in the Analysis of Operations data was leveraged for both individual and group).

Proposed Methodology—Data Staging, Cleaning, and Filtering

The data was then aggregated across multiple reporting years in order to calculate risk factors at each time horizon. Each aggregation was based on the record's year of submission. Table 2.4 below shows the different categories for each of the five aggregations:

Table 2.4

Base Year	1-Year Horizon Category	2-Year Horizon Category	3-Year Horizon Category	4-Year Horizon Category	5-Year Horizon Category
2012	2012	2012-2013	N/A	N/A	2012-2016
2013	2013	2012-2013	2013-2015	N/A	2012-2016
2014	2014	2014-2015	2013-2015	2014-2017	2012-2016
2015	2015	2014-2015	2013-2015	2014-2017	2012-2016
2016	2016	2016-2017	2016-2018	2014-2017	2012-2016
2017	2017	2016-2017	2016-2018	2014-2017	2017-2021
2018	2018	2018-2019	2016-2018	2018-2021	2017-2021
2019	2019	2018-2019	2019-2021	2018-2021	2017-2021
2020	2020	2020-2021	2019-2021	2018-2021	2017-2021
2021	2021	2020-2021	2019-2021	2018-2021	2017-2021

Proposed Methodology—Risk Statistics and Empirical Analysis

Subsequent to the assembly and preparation of formatted and cleansed data, the primary calculation used key values by LOB/market from the Analysis of Operations by LOB page:

- Net Premium Income (Line 1).
- Total Revenues (subtotal of Lines 1-6, reported on Line 7)—includes net premium income, change in unearned premium reserves and reserves for rate credits, fee-for-service, risk revenue, and aggregate write-ins for other revenue.
- Claims (subtotal of Lines 8-14 and 16, shown on Line 17)—includes incurred hospital/medical benefits, other professional services, outside referrals, emergency room and out-of-area, prescription drugs, and net reinsurance recoveries.
- Total Underwriting Deductions (includes Line 23)—includes claims subtotal, non-health claims, claims adjustment expenses, general administrative expenses, and changes in other reserves.

After summarizing these values for each company and market, operating ratios for purposes of risk analysis were calculated as follows:

$$\text{LR} = \text{Loss Ratio} = \text{Claims/Total Revenues}$$

$$\text{CoR} = \text{Combined Ratio} = \text{Total Underwriting Deductions/Total Revenues}$$

$$\text{Margin} = 1 - \text{CoR}$$

The average loss ratio and margin for each analysis period and market was calculated across all companies and risk percentiles/safety levels were evaluated: *Loss Ratio – Average Loss Ratio – Average Margin*. This value is a proxy for financial performance and, for higher risk percentiles/safety levels, potential loss over the relevant time period and market. The time periods over which these were calculated varied across all one-year periods, two-year periods, and so on (as available in the source data).

With respect to analysis of operations data, both the group and individual datasets were cleaned. This involved removing any datapoints that contained inaccuracies, major inconsistencies, or missing values or extreme data. These outlier provisions included:

- Missing/Negative Revenue
- Negative implied Administrative Expense Ratio (Loss Ratio > Combined Ratio)
- Combined Ratio $\geq 1,000\%$ or $\leq 0\%$
- Loss Ratio $\geq 1,000\%$ or $\leq 0\%$

The cleaned, empirical data was used in aggregation using the assumptions and factors described below to produce the resulting factor summaries.

Proposed Methodology—Net UW Risk Factor Formulas

For a given LOB/market and time horizon, the following formula was used to calculate the claims-based underwriting risk factor, net (inclusive) of the effects of managed care:

RF^N = Net Underwriting Risk Factor (including implicit effects of managed care)

$$RF^N = \frac{\text{Loss Ratio} - \text{Average Loss Ratio(Premium-Weighted)} - \text{Average Margin(Premium-Weighted)}}{\text{Average Loss Ratio (Premium-Weighted)}}$$

$$RF^N = \frac{LR - LR(\check{x}_w) - (1 - CoR(\check{x}_w))}{LR(\check{x}_w)}$$

The Net Underwriting Risk Factor, at a particular empirical risk percentile/safety level p (π_p), was calculated as follows:

$$RF^N(\pi_p) = \frac{LR(\pi_p) - LR(\check{x}_w) - (1 - CoR(\check{x}_w))}{LR(\check{x}_w)}$$

Proposed Methodology—Net Underwriting Risk Factor Adjustments

Subsequent to the development of Net Underwriting Risk Factors, three primary adjustments were made to develop factors suitable for inclusion in the RBC Formula:

1. Aggregate Adjustment for Medicaid Pass Through Revenue/Claims
2. MCC Adjustment/Gross-Up
3. Premium Tier Rebalancing

Therefore,

$$\text{RF} = \text{UW Risk Factor} = \text{Net UW Risk Factor} \times \text{Aggregate Adjustment} / \text{Managed Care Discount Factor} \times \text{Premium Tier Rebalance Factor}$$

$$\text{RF} = \text{RF}^{\text{N}} \times \text{AA} / \text{MCDF} \times \text{PTRF}$$

Each is explained in greater detail below:

1. Aggregate Adjustment—Medicaid Pass Through Revenue/Claims (AA)

A top-side adjustment was made for the Medicaid Market to adjust for the expected nationwide impact of pass-through payments. These payments are removed from the RBC calculation, so the observed RBC risk measure is leveraged to be applied to a smaller revenue level. Data at the company and year level was not available to support making this adjustment in detail.

2. Managed Care Discount Factor (MCDF)

In the calculation of net underwriting risk, the underwriting risk factors are compounded¹⁴ with the MCDF.¹⁵ The discount factor is a value less than or equal to 1.00, and lower values correspond to a more significant reduction in risk due to greater health care provider risk sharing.

The underwriting risk factors need to be formulated gross of managed care discount adjustments. This introduces a complication to observing historical variability by LOB, because the observations are necessarily tied to *net* underwriting risk.

As the MCDFs are updated, a change may be needed among the underwriting risk factors in order to balance back to a similar net underwriting risk factor at the industry level. Such an adjustment is likely to increase or decrease the net underwriting risk depending on the circumstances of each health plan.

¹⁴ See RBC formula, page XR013.

¹⁵ See RBC formula, page XR018. This factor is a weighted average calculated in the Health RBC report, page XR018 Line 17 columns 3, for Comprehensive Medical & Hospital, Medicare Supplement, and Dental/Vision lines of business. A separate value is calculated for Stand-Alone Medicare Part D business in column 3.

A composite MCDF was calculated for Comprehensive, Medicare, Medicaid, Medicare Supplement, Dental, and Vision lines of business. A separate factor is calculated for Stand-Alone Part D business.

For an illustrative large group LOB having 90% of provider payments capitated and 10% of payments based on a fee schedule, this would yield a net underwriting risk of:

Tier 3 Comprehensive Medical RBC Factor x [1 – (90% x factor for capitation + 10% x factor for fee schedules)]

$$0.09 \times [1 - (90\% \times 0.60 + 10\% \times 0.15)] = 0.090 \times 0.445 = 0.040$$

The average MCDF has been around 0.80 – 0.83 during the 2012-2020 period, with a gradual downward trend. This trend corresponds to the gradual increase in risk transfer arrangements between health plans and health care providers, including capitation, withholds subject to quality measures, and other value-based care arrangements.

The MCDF is not calculated at the LOB level, so the same factor is used for lines of business that may have varying degrees of risk transfer to health care providers. The same value is used for Comprehensive, Medicare Advantage, Medicaid, Medicare Supplement, and Dental/Vision lines of business.

For Stand-Alone Part D business, the MCDF is usually around 0.767¹⁶, because that is the factor for Part D products where Federal Reinsurance and Risk Corridor protections apply. Hence, the net underwriting risk for an illustrative large Stand-Alone Part D business would be:

$$0.151 \text{ (Tier 3 Stand-Alone Part D RBC Factor)} \times [0.767] = 0.116$$

3. Upper Premium Tier Factor Rebalancing (PTRF)

By design in the graduated structure, different risk factors are applied on higher levels of earned premium for most markets. A large company with premiums in the higher tier range will have a risk factor that is a revenue-weighted composite of the risk factors in both tiers. The risk factor calculation for the upper premium tier was performed on a ground-up basis. Therefore, upper premium factors required adjustment to ensure the average-sized entity received the appropriate (all-entity/all revenue level) risk factor. The Work Group notes that there are a variety of methodologies available for this step that may yield differing but reasonable results (e.g., maintaining the relative ratio of the small company risk to large company risk factor while achieving the same total industry risk factor).

Discussion: Proposed Methodology—Risk Percentiles/Safety Levels and Time Horizon

The level of loss ratio variability was modeled at various risk percentiles/safety levels and time horizons (up to five years). Selecting a higher safety level leads to a higher risk factor, affording

¹⁶ As federal risk mitigation programs for Part D evolve over time, this factor may be updated by NAIC going forward. For now, the factor has been backed out in the historical analysis to arrive at a Stand-Alone Part D RBC factor.

more safety, but may also have less credibility due to being driven by a smaller set of companies in the historical experience.¹⁷

Under the approach outlined in this analysis, controlling for the safety level, the highest risk factors tend to be indicated by the one-year horizon. As the horizon increases, the indicated risk factor tends to decrease due to several phenomena including, but not limited to:

- *Reversion to the mean*: the factor represents the average loss at the selected risk percentile/safety level over multiple years, rather than the worst single-year loss during the horizon.
- *Re-pricing cycle*: early losses might be matched with subsequent improved results due to rating actions.
- *Survivorship bias*: companies that leave a LOB in the near term are not included in the statistics for longer horizons.
- *Averaging vs. Low water mark*: calculations using a multi-year horizon reflect the average, instead of worse, gain/loss during that time period.

Considering these phenomena and the approach utilized, the risk factors should be interpreted as the average claims loss over each indicated horizon rather than the worst claims loss in a single year over each indicated horizon.

In the situation where a multiple-year risk horizon is desired by the NAIC, the selection of a horizon for final factors should consider time between when credible experience is observed and the health plan has a practical opportunity to revise rates.

Discussion: Proposed Methodology—Factor Output

For Vision, note that the indicated risk factors are negative in some cases. This is because at the 87.5th risk percentile/safety level, company loss ratios remained low enough to allow for industry average non-benefit expenses. In the above presentation, negative risk factors at a particular risk percentile/safety level suggest that, based on the empirical analysis, a company earning the average industry margin would have sufficient premium to cover claims risk at that risk percentile/safety level.

For Medicaid, we decided to use results that reflect an aggregated tier across all revenue levels for credibility purposes. A very small portion of Medicaid entities in the data were in Tier 1, leading to unreasonably high results in the Tier 1 factors and unreasonably low results in the Tier 2 factors after the balancing adjustment. This did not occur for other lines of business, where there was more proportionality in entity count between Tier 1 and Tier 2. If the mix of Medicaid entities by revenue level changes in the future and this circumstance is removed, then it may be appropriate to differentiate factors by Tier again.

¹⁷ Percentiles are identified from the historical data using Excel's algorithm, without smoothing or extrapolation.

Discussion: Proposed Methodology—Assumptions/Considerations

Representativeness of Historical Period

A key challenge in evaluating loss ratio variability over time is that it can include significant, industry-wide events, such as the COVID-19 pandemic, including underwriting results during and coming out of the period of maximum disruption and uncertainty. On the one hand, censoring data from these time periods can remove experience that is not representative of typical underwriting conditions. On the other hand, removing these data points can create an unrealistic view of long-term variability and lighten the tail of the distribution of risk. By evaluating data over a longer period of time, the analysis can capture a broader sample of conditions, including more of the underwriting cycle and relatively rare events. For the analysis, the Work Group proposes to continue using the full experience available in the 2012-2021 data period.

As the Work Group mentioned in the January 2022 report, there has been considerable evolution in the health economy since HRBC was first developed in the 1990s. The most obvious is the significant rise in the size of the health economy, which grew by 5.6% annually over the 25 years from 1997 to 2022,¹⁸ amounting to nearly a four-fold cumulative increase over the period.

The Work Group's modeling retains tiered risk factors; however, the Work Group recommends using \$10M and \$100M as updated premium tier "cut-points" as opposed to the current \$3M and \$25M. This adjustment is intended to capture market dynamics that influence risk (e.g., medical cost growth and insurance volume) while maintaining directional accuracy and parsimony in both modeling and application. As such, the Work Group's modeling is based upon the updated cut-points.

Recommended Frequency of Factor Updates

The Work Group recommends updating the factors every five years. The experience period was at least 10 years for this analysis and so a five-year cadence would have the advantage of incorporating approximately 50% new data and 50% data from the previous analysis. A five-year window also allows for more of an underwriting cycle to develop between updates. Finally, the P&C methodology is likely to have a similar cadence. In situations where a particular market is going through major policy changes or unusual circumstances, a transitional analysis could be performed to update factors on a different schedule as well as potentially phase-in to new factors with particularly large changes.

¹⁸ CMS National Health Expenditures by type of service and source of funds, CY 1960-2023, download available at [https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data/historical#:~:text=The%20National%20Health%20Expenditure%20Accounts,CY%201960%2D2023%20\(ZIP\)](https://www.cms.gov/data-research/statistics-trends-and-reports/national-health-expenditure-data/historical#:~:text=The%20National%20Health%20Expenditure%20Accounts,CY%201960%2D2023%20(ZIP).).

Use of Average Margin from Market in Loss Ratio Calculation

In the calculation of net underwriting risk factors, the average margin (premium-weighted) is subtracted from each empirical observation of company-specific loss ratio. Through this step, unexpectedly high claims experience is reduced by the market average margin before being counted as a loss, and it thereby separates underwriting risk from evaluation of H4 business risk and financial losses arising from unexpectedly high administrative costs. This average margin is based on the industry average in the same market and applicable to the same time period and horizon. As a result, it reflects the average pricing margin of the market during the same period and is complementary to the empirical observations on company-specific variability.

In future updates to the factors, the industry margin will be automatically updated using the same market, time period, and horizon, which will guarantee that an adjustment remains complementary to the volatility observed in the empirical data.

Approach to Future Adjustments to Premium Tier Cutoffs

Going forward, the tier cutoffs could be automatically indexed to increase over time or be periodically updated directly. The Work Group recommends periodically updating the tier cutoffs over time, instead of setting an automatic indexing. This has the advantage of making the formula parameters more predictable.

Potential Selection Bias for High Loss Ratio Companies

A potential limitation of the methodology is that the loss ratio of each company is compared to the average loss ratio and margin in the overall market for the same time period. Because the cost structure of each company is different, there may be situations where higher loss ratios do not necessarily imply worse outcomes (i.e., some larger companies may consistently have higher loss ratios because they can manage administrative expense to a lower level). However, for purposes of risk factor determination, it was assumed that volatility in claims outweighed this particular offset in the aggregate.

Discussion: Proposed Methodology—Other Considerations

In this section, additional considerations related to the methodology and interpretation of results are discussed.

Coordinating Risk Factor Updates to MCC Updates

When the MCC formula is updated, an update to the H2 risk factors may be needed as well in order to preserve the relationship between historical volatility and the net risk factors produced by the formula. In the proposed formulation of H2 risk factors, the empirical observations represent net risk and the MCC is backed out to arrive at gross factors.

Evolving Level of Risk Inherent to Markets

The level of risk in a particular market may evolve over time. For example, the commercial market evolved significantly beginning with the Affordable Care Act (ACA) implementation in 2014, introducing programs such as risk adjustment, risk corridors, and federal reinsurance. Other reforms to Medicare and Medicaid can change the risk profile over time.

By evaluating experience over time and periodically updating the analysis, these evolving levels of risk will manifest in the data and in the model results.

The Work Group recommends letting emerging data inform changes to risk factors, rather than prospectively changing the formula to account for the potential changes to markets in the future.

State-specific Variation in Risk Levels

Risk factors in the RBC formula may vary by market, but they do not vary at the regional or state level. Rate filings and loss ratios for most LOBs are regulated by a combination of state and/or federal regulators. No explicit adjustments were made due to minimum loss ratio requirements or other loss ratio pricing requirements at the federal or state level for any LOB presented in this letter. The Work Group believes these requirements are implicitly represented in the statutory financial statement data utilized to calibrate the risk factors.

Correlations and Diversification across Markets

There is a theoretical potential for correlation between markets and therefore the Work Group considered the potential value of diversification across multiple markets, such as the diversification credit used in the P&C formula. While some risks are company-specific (such as high administrative expense) and nationwide (such as a pandemic or general inflation), other risks are market-specific. These can include the level of competitiveness in pricing in each market and changes in Medicare or Medicaid program policy affecting the richness of benefits and pricing approach. It is reasonable to expect some diversification between market-specific risks. The current RBC formula for H2 risk does not include a diversification credit. The Work Group did not study this formally for this analysis but believes it could be valuable to investigate in the future, particularly as the P&C group works to refine its approach to diversification calculations.

Track 3: HRBC XR018 and XR019 (Managed Care Credit) Redesign

Existing Managed Care Credit Methodology

The MCC seeks to account for volatility in claims costs relative to the coverage period. For instance, if an actuary were aware of capitation rates during the rating cycle, that would improve the likelihood of rate adequacy.

The MCC calculation historically has used five factors that reflect the impact of different types of provider contracts on medical claim predictability and volatility. The factor associated with each contract category is applied to the level of incurred claims in that category and an overall discount or credit is calculated based on the relative claim weights. The discount factors have remained unchanged since they were first adopted.

For example, fully capitated provider contracts (e.g., when providers are accepting 100% of the underwriting risk) are generally assumed to provide a health insurer with substantial financial protection and, accordingly, the substantial credit noted in Table 3.1 below. Other provider contracts may also provide the health insurer with a range of financial protection less than full capitation (e.g., from discounted fee-for-service contracts to partial capitation and/or withholding funds from the provider that may only be paid after financial results have been evaluated against the provider contract agreement). The factors in Table 3.1 that vary by type of provider contract reflect this range of financial protection for the health insurer.

The MCC is intended to account for the reduction in underwriting expense variation from transferring risk to providers, but it is not intended to include the risk that providers will default on their performance or financial obligations from risk transfers. The Health RBC formula addresses provider credit risk in two principal areas: (a) the numerator of the RBC ratio, Total Adjusted Capital (TAC), does not include most longer term provider receivables per the accounting rules for admitted assets; and (b) Credit Risk (H3) accounts for the risk of nonpayment of provider receivables and non-performance of capitation.

Table 3.1: Existing MCC Categories

Category	Credit
Category 0—Arrangements not Included in Other	0%
Category 1—Contractual Fee Payments	15%
Category 2a—Bonus/Withhold Arrangements—Otherwise Category 0	0-25%
Category 2b—Bonus/Withhold Arrangements—Otherwise Category 1	15-25%
Category 3a—Capitated Payments Directly to Providers	60%
Category 3b—Capitated Payments to Regulated Intermediaries	60%
Category 3c—Capitated Payments to Non-Regulated Intermediaries	60%
Category 4—Non-Contingent Expenses and Aggregate Cost Arrangements and Certain PSO Capitated Arrangements	75%

Management reports the amounts in each category through Table 3.2 Exhibit 7 – Part 1 – Summary of Transactions with Providers, a supplement on the Annual Statement. The existing template for that reporting is set up slightly differently.

Table 3.2: Existing Exhibit 7—Part 1 – Summary of Transactions with Providers

Payment Method	Category
Capitation Payments:	
1. Medical Groups	3a
2. Intermediaries	3b / 3c
3. All other providers	N/A
4. Total capitation payments	N/A
Other Payments:	
5. Fee-for-service	0
6. Contractual fee payments	1
7. Bonus/withhold arrangements—fee-for-service	2a
8. Bonus/withhold arrangements—contractual fee payments	2b
9. Non-contingent salaries	4
10. Aggregate cost arrangements	4
11. All other payments	N/A
12. Total other payments	N/A

Proposed Revisions to the MCC Methodology

The nature of insurer/provider relationships has evolved significantly over the past 25 years since the existing categories were developed. While fee-for-service payments are still common, there has been a significant increase in risk arrangements, particularly for government lines of business.

Insurance carriers have continued to move providers toward risk-based contracts as providers' risk tolerances have grown; frequently, this has led to improvement in member medical management and increasing insurer predictability of claims costs.

As a result, the existing MCC categories are not sufficiently detailed. The Work Group proposed Table 3.3 Exhibit 7 – Part 1 – Summary of Transactions with Providers to encapsulate emerging provider contracting approaches. The Work Group plans to study the impact these arrangements have on claim volatility in future years to develop a revised MCC methodology.

Table 3.3: Proposed Exhibit 7 – Part 1 – Summary of Transactions with Providers

Payment Method	Category
Capitation Payments:	
1. Medical Groups	4a
2. Intermediaries	4b/4c
3. All other providers	N/A
4. Total capitation payments	N/A
Other Payments:	
5. Fee-for-service	0
6. Contractual fee payments	1
7. Bonus/withhold arrangements—fee-for-service	N/A
– Bonus payment exposure	N/A
– Bonus payments made	N/A
8. Bonus/withhold arrangements—contractual fee payments	N/A
7. Case Rates/Bundles	2
8. Up and downside risk sharing	3
– Downside risk exposure	N/A
– Downside risk due	N/A
– Actual recovered downside risk	N/A
9. Non-contingent salaries	4a
10. Aggregate cost arrangements	4a
11. All other payments	N/A
12. Total other payments	N/A

Namely, the Work Group proposes introducing two new provider contracting categories more common in today's health landscape which materially shift risk from insurance carriers. The Work Group proposes defining these categories as follows:

Proposed Category 2—Case Rates/Bundles: Risk is shifted to a provider for all services associated with a particular condition or bundle of services.

Proposed Category 3—Up and downside risk sharing: Provider has a payment target for which they share in the gains or losses relative to that target.

There are numerous variations on up- and downside risk-sharing, including stop loss, deficit forgiveness, etc. Thus, the Work Group proposes requesting actual historical downside risk exposure, downside risk due, and recovered downside risk dollars to support a dynamic credit, similar to how existing Category 2 is constructed.

This proposal contemplates removal of the bonus/withhold arrangements category, which in practice did not provide any additional benefit relative to Category 0 and 1, because it was highly unlikely for bonus payments to exceed 15% of claim costs. The Work Group is also considering a combination of existing Category 3a and 4a into a new Category 4a. Both categories provide credit for shifting the risk to a provider. The existing methodology provides additional credit for paying a related physician in the form of a salary rather than a capitation, however in both cases the risk has been shifted. To make a final determination, the Work Group plans to study the relative volatility of providers with these various arrangements under the proposed Exhibit 7 – Part 1 – Summary of Transactions with Providers, in addition to the other adjustments in consideration.

Lastly, the existing Exhibit 7 – Part 1 – Summary of Transactions with Providers and MCC utilizes claims reported on a gross of reinsurance basis. Reinsurance contracts have become substantially more complex over the years, resulting in some insurers tailoring reinsurance around the MCC. To understand the impact, the Work Group proposes requesting the figures in the proposed Exhibit 7 – Part 1 – Summary of Transactions with Providers on both a gross and net of reinsurance basis.

The Work Group proposes revising Exhibit 7 – Part 1 – Summary of Transactions with Providers for the 2025 financial statement. After five years of insurer reporting, the Work Group will analyze the data and consider if an additional year is required to inform results. If the Work Group is comfortable with the data as is, they will perform the analysis in 2030 and finalize the proposed changes to XR018 — Underwriting Risk — MCC for the 2031 RBC. The Work Group also proposes a five-year review cycle for future changes to the MCC methodology and factors.

Appendix

Appendix 2.A.1: Factor Develop Data Filter Logic: Analysis of Operations by Line of Business (LOB)

Data was removed based on the following criteria:

LOB	Total Rev ≤ \$0	Loss Ratio ≤ 0%	Combined Ratio ≤ 0%	AER ≤ 0%	Extreme Combined Ratio > 1000%
Dental	X	X	X	X	X
Vision	X	X	X	X	X
Medicare Supplement	X	X	X	X	X
Comprehensive – Individual	X	X	X	X	X
Comprehensive – Group	X	X	X	X	X
Medicaid	X	X	X	X	X
Standalone Part D					

Appendix 2.A.2: Factor Develop Data Filter Logic: A&H Policy Experience Exhibit

Data was removed based on the following criteria:

LOB	Negative Member Months	Earned Premium < 100K	No Claim s	No Claims but Earned Premiu m	Loss Ratios < 40%	Loss Ratios < - 200%	Loss Ratios between -40% and 40%
Medicare Advantage – Group	X	X	X		X		
Medicare Advantage – Individual	X	X		X		X	X

Appendix 2.B.1: Compilation of Revised Risk Factors—Net of Managed Care Impact

Appendix 2.B.1

Compilation of Claims-Based Risk Factors - Net of Managed Care Impact By Market, Horizon, and Percentile

Market	Percentile	Tier \$0 - \$10M			Tier \$0 - \$100M			Tier \$10M and above			Tier \$100M and above		
		1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Comprehensive - Group \$0-\$100M, \$100M+	87.5				0.213	0.190	0.181				0.060	0.054	0.044
	95.0				0.343	0.318	0.264				0.100	0.084	0.078
Comprehensive - Individual \$0-\$100M, \$100M+	87.5				0.206	0.200	0.247				0.136	0.117	0.099
	95.0				0.378	0.411	0.367				0.197	0.159	0.144
Medicaid \$0-\$100M, \$100M+	87.5				0.065	0.058	0.052	(1)			0.065	0.058	0.052
	95.0				0.116	0.107	0.107	(1)			0.116	0.107	0.107
Medicare Supplemental \$0-\$10M, \$10M+	87.5	0.304	0.316	0.379				0.027	0.009	0.009			
	95.0	0.519	0.577	0.737				0.105	0.086	0.077			
Medicare Advantage	87.5				0.246	0.242	0.225				0.058	0.055	0.048
	95.0				0.379	0.344	0.311				0.115	0.101	0.090
Stand-alone Part D \$0-\$100M, \$100M+	87.5				0.204	0.116	0.111				0.069	0.039	0.018
	95.0				0.366	0.214	0.207				0.114	0.088	0.079
Dental \$0-\$10M, \$10M+	87.5	0.125	0.119	0.123				0.023	0.015	0.001			
	95.0	0.237	0.230	0.206				0.107	0.110	0.099			
Vision \$0-\$10M, \$10M+	87.5	0.083	0.097	0.094				-0.035	-0.035	-0.041			
	95.0	0.268	0.244	0.265				0.043	0.065	-0.015			

(1) Medicaid values reflect an aggregate tier across all revenue levels

Appendix 2.B.2.a: Compilation of Revised Underwriting Risk Factors—Aggregate Adjustments

Appendix 2.B.2.a Aggregate Adjustments By Market, Horizon, and Percentile

Market	Percentile	Tier \$0 - \$10M			Tier \$0 - \$100M			Tier \$10M and above			Tier \$100M and above		
		1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Comprehensive - Group \$0-\$100M, \$100M+	87.5				1.000	1.000	1.000				1.000	1.000	1.000
	95.0				1.000	1.000	1.000				1.000	1.000	1.000
Comprehensive - Individual \$0-\$100M, \$100M+	87.5				1.000	1.000	1.000				1.000	1.000	1.000
	95.0				1.000	1.000	1.000				1.000	1.000	1.000
Medicaid \$0-\$100M, \$100M+	87.5				1.025	1.025	1.025				1.025	1.025	1.025
	95.0				1.025	1.025	1.025				1.025	1.025	1.025
Medicare Supplemental \$0-\$10M, \$10M+	87.5	1.000	1.000	1.000				1.000	1.000	1.000			
	95.0	1.000	1.000	1.000				1.000	1.000	1.000			
Medicare Advantage	87.5				1.000	1.000	1.000				1.000	1.000	1.000
	95.0				1.000	1.000	1.000				1.000	1.000	1.000
Stand-alone Part D \$0-\$100M, \$100M+	87.5				1.000	1.000	1.000				1.000	1.000	1.000
	95.0				1.000	1.000	1.000				1.000	1.000	1.000
Dental \$0-\$10M, \$10M+	87.5	1.000	1.000	1.000				1.000	1.000	1.000			
	95.0	1.000	1.000	1.000				1.000	1.000	1.000			
Vision \$0-\$10M, \$10M+	87.5	1.000	1.000	1.000				1.000	1.000	1.000			
	95.0	1.000	1.000	1.000				1.000	1.000	1.000			

Note: Aggregate adjustment for Medicaid made to account for expected nationwide impact of provider pass through payment carve out in H2 RBC factor calculation

Appendix 2.B.2.b: Compilation of Claims-Based Risk Factors—Composite MCC Factors in Historical Data

Appendix 2.B.2.b Composite Managed Care Credit Factors in Historical Data By Market, Horizon, and Percentile

Market	Percentile	Tier \$0 - \$10M			Tier \$0 - \$100M			Tier \$10M and above			Tier \$100M and above		
		1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Comprehensive - Group \$0-\$100M, \$100M+	87.5				0.846	0.844	0.849				0.824	0.824	0.823
	95.0				0.846	0.844	0.849				0.824	0.824	0.823
Comprehensive - Individual \$0-\$100M, \$100M+	87.5				0.834	0.837	0.833				0.846	0.846	0.846
	95.0				0.834	0.837	0.833				0.846	0.846	0.846
Medicaid \$0-\$100M, \$100M+	87.5				0.806	0.808	0.803				0.806	0.808	0.803
	95.0				0.806	0.808	0.803				0.806	0.808	0.803
Medicare Supplemental \$0-\$10M, \$10M+	87.5	0.824	0.830	0.825				0.874	0.875	0.874			
	95.0	0.824	0.830	0.825				0.874	0.875	0.874			
Medicare Advantage	87.5				0.830	0.834	0.825				0.776	0.775	0.778
	95.0				0.830	0.834	0.825				0.776	0.775	0.778
Stand-alone Part D \$0-\$100M, \$100M+	87.5				0.767	0.767	0.767				0.767	0.767	0.767
	95.0				0.767	0.767	0.767				0.767	0.767	0.767
Dental \$0-\$10M, \$10M+	87.5	0.762	0.762	0.760				0.912	0.913	0.913			
	95.0	0.762	0.762	0.760				0.912	0.913	0.913			
Vision \$0-\$10M, \$10M+	87.5	0.884	0.887	0.885				0.885	0.883	0.870			
	95.0	0.884	0.887	0.885				0.885	0.883	0.870			

Note: Stand-alone Part D factor based on assumption that essentially all payments are in Category 3a (Federal Reinsurance and Risk Corridor Protection Apply; see XR018). Medicaid values reflect all entities and an aggregated tier across all revenue levels.

Appendix 2.B.2.c: Upper Tier Factor Balancing Adjustment

Appendix 2.B.2.c Upper Tier Factor Balancing Adjustment By Market, Horizon, and Percentile

Market	Percentile	Tier \$0 - \$10M			Tier \$0 - \$100M			Tier \$10M and above			Tier \$100M and above		
		1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Comprehensive - Group \$0-\$100M, \$100M+	87.5										-33%	-10%	-7%
	95.0										-32%	-11%	-6%
Comprehensive - Individual \$0-\$100M, \$100M+	87.5										-14%	-6%	-7%
	95.0										-25%	-12%	-7%
Medicaid \$0-\$100M, \$100M+	87.5										0%	0%	0%
	95.0										0%	0%	0%
Medicare Supplemental \$0-\$10M, \$10M+	87.5							-85%	-88%	-68%			
	95.0							-33%	-15%	-14%			
Medicare Advantage	87.5										-40%	-13%	-9%
	95.0										-28%	-9%	-6%
Stand-alone Part D \$0-\$100M, \$100M+	87.5										-33%	-10%	-16%
	95.0										-38%	-7%	-5%
Dental \$0-\$10M, \$10M+	87.5							-59%	-28%	-405%			
	95.0							-18%	-5%	-3%			
Vision \$0-\$10M, \$10M+	87.5							42%	15%	8%			
	95.0							-66%	-11%	45%			

Note: balancing adjustment is zero for Medicaid because a values reflect an aggregated tier across all revenue levels

Appendix 2.B.3: Claims Based Risk Factors, Gross of MCC Factor and Aggregate Adjustments and Rebalanced by Tier

Appendix 2.B.3

Claims Based Risk Factors, Gross of Managed Care Credit Factor and Aggregate Adjustments and Rebalanced by Tier By Market, Horizon, and Percentile

Market	Percentile	Tier \$0 - \$10M			Tier \$0 - \$100M			Tier \$10M and above			Tier \$100M and above		
		1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year	1-Year	3-Year	5-Year
Comprehensive - Group \$0-\$100M, \$100M+	87.5				0.251	0.226	0.213				0.048	0.059	0.049
	95.0				0.406	0.377	0.311				0.083	0.091	0.089
Comprehensive - Individual \$0-\$100M, \$100M+	87.5				0.247	0.239	0.296				0.138	0.131	0.109
	95.0				0.454	0.491	0.441				0.175	0.164	0.158
Medicaid \$0-\$100M, \$100M+	87.5				0.083	0.074	0.066				0.083	0.074	0.066
	95.0				0.148	0.135	0.137				0.148	0.135	0.137
Medicare Supplemental \$0-\$10M, \$10M+	87.5	0.369	0.381	0.460				0.005	0.001	0.003			
	95.0	0.629	0.695	0.894				0.081	0.084	0.076			
Medicare Advantage	87.5				0.296	0.290	0.273				0.044	0.062	0.056
	95.0				0.456	0.412	0.377				0.106	0.118	0.109
Stand-alone Part D \$0-\$100M, \$100M+	87.5				0.267	0.151	0.145				0.060	0.046	0.019
	95.0				0.477	0.279	0.270				0.093	0.106	0.098
Dental \$0-\$10M, \$10M+	87.5	0.164	0.156	0.162				0.011	0.012	-0.003			
	95.0	0.311	0.301	0.272				0.096	0.114	0.106			
Vision \$0-\$10M, \$10M+	87.5	0.094	0.109	0.106				-0.057	-0.045	-0.051			
	95.0	0.303	0.275	0.300				0.016	0.066	-0.024			

Note: Medicaid values reflect an aggregated tier across all revenue levels

Appendix 2.C.1—Step Through of Historical Data and Calculations for Illustrative Market, Risk Percentile/Safety Level, and Horizon – Comprehensive – Group, 95th Risk Percentile/Safety Level, 1-Year Horizon

Appendix 2.C.1 - Comprehensive - Group, 87.5th percentile, 1-Year Horizon Step Through of Historical Data and Calculations for an Illustrative Market, Percentile, and Horizon

Market and Tiering Method

Comprehensive - Group
Tier \$0 - \$100M - Tier \$100M and above

Horizon and Percentile

1-Year
Percentile 87.5

		Tier 1 Entities	Tier 2 Entities	Source	Notes
Historical Sample Characteristics					
Revenue Tier		LT \$100M	GE \$100M		Assigned based on average revenue during analysis period
Annual Revenue (\$Billions)	R	\$39	\$1,447	App 2.B.2.c.1	
Entity Count	N	1,184	1,715	App 2.B.2.c.2	
Statistical Calculations					
Claims-Based Risk Factor - Net of Managed Care Impact	a	0.213	0.060	App 2.B.1	Historical adverse claims risk at 87.5 percentile
Aggregate Adjustments (if applicable)	b1	1.000	1.000	App 2.B.2.a	Not applicable
Average Managed Care Credit Factor	b2	0.846	0.824	App 2.B.2.b	MCC is calculated at the company level; here, the average for the market and tier composited using each entity's revenue in the applicable line of business
Claims-Based Risk Factor - Gross of Managed Care Credit Factor	c = a*b1/b2	0.251	0.072		Estimate of claims-based risk factor after removing RBC model's assumed impact of managed care credit and applying any aggregate adjustments (if applicable)
Rebalance Claims-Based Risk Factor by Tier					
Tier 1 Factor	d	0.251			Set equal to factor calculated from companies in Tier 1 and intended to apply to company's annual revenue LT \$100M
Threshold for 2nd Tier (\$millions)	e		\$100		
Tier 2 Factor	f		0.048		Rebalanced to apply to only revenue GE \$100M $f = [(R * c) - (d * e/1,000)] / [R - N * e/1,000]$
Impact of Rebalancing Tier 2 Factor	=f/c		-33.3%	App 2.B.2.c	Percentage change in upper tier factor after rebalancing
Rebalance Claims-Based Risk Factor by Tier					
		LT \$100M	GE \$100M	Source	Notes
Tiered Risk Factors	d,f	0.251	0.048	App 2.B.3	
Risk Factor Calculation for Example Company					
Revenue in LOB (\$millions)	x			\$800	Illustrative input
Managed Care Credit Factor	y			0.750	Illustrative input
Gross risk in first tier	z1 = e * d	25.1			
Gross risk in second tier	z2 = (x - e) * f		33.8		
Total gross risk, divided by revenue				0.074	
Average risk, after Managed Care Credit Factor				0.055	

Appendix 2.C.2—Step Through of Historical Data and Calculations for Illustrative Market, Risk Percentile/Safety Level, and Horizon – Medicaid, 95th Risk Percentile/Safety Level, 1-Year Horizon

Appendix 2.C.2 - Medicaid, 87.5th percentile, 1-Year Horizon Step Through of Historical Data and Calculations for an Illustrative Market, Percentile, and Horizon

Market and Tiering Method

Medicaid
Tier \$0 - \$100M - Tier \$100M and above

Horizon and Percentile

1-Year
Percentile 87.5

		Tier 1 Entities	Tier 2 Entities	Source	Notes
Historical Sample Characteristics					
Revenue Tier		LT \$100M	GE \$100M		Assigned based on average revenue during analysis period
Annual Revenue (\$Billions)	R	\$15	\$1,688	App 2.B.2.c.1	
Entity Count	N	409	1,741	App 2.B.2.c.2	
Statistical Calculations					
Claims-Based Risk Factor - Net of Managed Care Impact	a	0.065	0.065	App 2.B.1	Historical adverse claims risk at 87.5 percentile
Aggregate Adjustments (if applicable)	b1	1.025	1.025	App 2.B.2.a	Aggregate adjustment to adjust for expected nationwide impact of pass through payments. These payments are removed from the RBC calculation, so the observed
Average Managed Care Credit Factor	b2	0.806	0.806	App 2.B.2.b	MCC is calculated at the company level; here, the average for the market and tier composited using each entity's revenue in the applicable line of business
Claims-Based Risk Factor - Gross of Managed Care Credit Factor	c = a*b1/b2	0.083	0.083		Estimate of claims-based risk factor after removing RBC model's assumed impact of managed care credit and applying any aggregate adjustments (if applicable)
Rebalance Claims-Based Risk Factor by Tier					
Tier 1 Factor	d	0.083			Set equal to factor calculated from companies in Tier 1 and intended to apply to company's annual revenue LT \$100M
Threshold for 2nd Tier (\$millions)	e		\$100		
Tier 2 Factor	f		0.083		Rebalanced to apply to only revenue GE \$100M $f = [(R * c) - (d * e/1,000)] / [R - N * e/1,000]$
Impact of Rebalancing Tier 2 Factor	=f/c		0.0%	App 2.B.2.c	Percentage change in upper tier factor after rebalancing
Rebalance Claims-Based Risk Factor by Tier					
		LT \$100M	GE \$100M	Source	Notes
Tiered Risk Factors	d,f	0.083	0.083	App 2.B.3	
Risk Factor Calculation for Example Company					
Revenue in LOB (\$millions)	x		\$800		Illustrative input
Managed Care Credit Factor	y		0.750		Illustrative input
Gross risk in first tier	z1 = e * d	8.3			
Gross risk in second tier	z2 = (x - e) * f		57.9		
Total gross risk, divided by revenue					0.083
Average risk, after Managed Care Credit Factor					0.062

Appendix 2.C.3—Step Through of Historical Data and Calculations for Illustrative Market, Risk Percentile/Safety Level, and Horizon – Dental, 95th Risk Percentile/Safety Level, 1-Year Horizon

Appendix 2.C.3 - Dental, 87.5th percentile, 1-Year Horizon Step Through of Historical Data and Calculations for an Illustrative Market, Percentile, and Horizon

Market and Tiering Method

Dental
Tier \$0 - \$10M - Tier \$10M and above

Horizon and Percentile

1-Year
Percentile 87.5

		Tier 1 Entities	Tier 2 Entities	Source	Notes
Historical Sample Characteristics					
Revenue Tier		LT \$10M	GE \$10M		Assigned based on average revenue during analysis period
Annual Revenue (\$Billions)	R	\$4	\$125	App 2.B.2.c.1	
Entity Count	N	1,299	1,240	App 2.B.2.c.2	
Statistical Calculations					
Claims-Based Risk Factor - Net of Managed Care Impact	a	0.125	0.023	App 2.B.1	Historical adverse claims risk at 87.5 percentile
Aggregate Adjustments (if applicable)	b1	1.000	1.000	App 2.B.2.a	Not applicable
Average Managed Care Credit Factor	b2	0.762	0.912	App 2.B.2.b	MCC is calculated at the company level; here, the average for the market and tier composited using each entity's revenue in the applicable line of business
Claims-Based Risk Factor - Gross of Managed Care Credit Factor	c = a*b1/b2	0.164	0.026		Estimate of claims-based risk factor after removing RBC model's assumed impact of managed care credit and applying any aggregate adjustments (if applicable)
Rebalance Claims-Based Risk Factor by Tier					
Tier 1 Factor	d	0.164			Set equal to factor calculated from companies in Tier 1 and intended to apply to company's annual revenue LT \$10M
Threshold for 2nd Tier (\$millions)	e		\$10		
Tier 2 Factor	f		0.011		Rebalanced to apply to only revenue GE \$10M $f = [(R * c) - (d * e/1,000)] / [R - N * e/1,000]$
Impact of Rebalancing Tier 2 Factor	=f/c		-59.0%	App 2.B.2.c	Percentage change in upper tier factor after rebalancing
Rebalance Claims-Based Risk Factor by Tier					
		LT \$10M	GE \$10M	Source	Notes
Tiered Risk Factors	d,f	0.164	0.011	App 2.B.3	
Risk Factor Calculation for Example Company					
Revenue in LOB (\$millions)	x		\$80		Illustrative input
Managed Care Credit Factor	y		0.900		Illustrative input
Gross risk in first tier	z1 = e * d	1.6			
Gross risk in second tier	z2 = (x - e) * f		0.7		
Total gross risk, divided by revenue					0.030
Average risk, after Managed Care Credit Factor					0.027

Additional Appendices Included in the Embedded Excel Workbook¹⁹

- Appendix 2.B.2.c.i: Annual Revenue (\$Billions) Among Entities in Each Analysis Cell
- Appendix 2.B.2.c.ii: Historical Count of Entities in Each Analysis Cell
- Appendix 2.D.1: Comprehensive (Group and Individual)—Historical Health Risk Analysis
- Appendix 2.D.2: Medicaid—Historical Health Risk Analysis
- Appendix 2.D.3: Medicaid Supplemental—Historical Health Risk Analysis
- Appendix 2.D.4: Medicare Advantage—Historical Health Risk Analysis
- Appendix 2.D.5: Stand-Alone Part D—Historical Health Risk Analysis
- Appendix 2.D.6: Dental—Historical Health Risk Analysis
- Appendix 2.D.7: Vision—Historical Health Risk Analysis

¹⁹ Please download this pdf document, and double-click the above icon to download an Excel version of the Additional Appendices.