



NYCIRB

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Workers' Compensation Experience Rating Plan Effective October 1, 2022 Technical Actuarial Support Memorandum

Introduction

This document provides actuarial support for the revised New York Workers' Compensation Experience Rating Plan ("plan"). Major changes include the application of a new experience rating modification ("mod") formula, which utilizes a variable split point and introduces a novel capping procedure. In addition, the changes include the elimination of the merit rating plan and necessitate departure from the interstate rating plan administered by the National Council on Compensation Insurance ("NCCI"). Several other aspects from the prior plan will also change, including the state accident limit and credibility structure. The new plan, which will apply to all risks in New York with exposure during the experience period, will be more accurate, equitable, and easier to understand. The new plan will become effective for experience rating mods promulgated with effective dates of October 1, 2022 and subsequent.

Executive Summary

Reasons for the Change

The prior New York Experience Rating plan was based on a plan designed by the NCCI several decades ago. A multi-year review of the prior plan in New York revealed several problems.

First, when performing a standard quintile test,¹ it was evident that under the prior plan the standard loss ratios (after application of the mods) exhibit an increase as the mod increases. An ideal result would be for the standard loss ratios to be equal across quintiles. The upward slope in the standard loss ratios is not desirable as it does not generate an appropriate amount to cover expected losses. This implies that risks with better than expected loss experience do not receive sufficient experience rating credits, and risks with worse than expected loss experience do not receive sufficient experience rating debits.

Second, the credibility framework underlying the prior plan results in a very high state accident limit. This can result in high experience rating modification factors for risks that experience very large losses. Due to the random nature of large losses, the resulting mods are often not predictive of future loss experience.

¹ See Gillam, William R, "Workers Compensation Experience Rating: What Every Actuary Should Know" (Pages 219 -220); <https://www.casact.org/pubs/proceed/proceed92/92215.pdf>



Third, the prior experience rating plan included a merit rating plan, which allowed for smaller risks (generally with premiums under \$5,000) to have experience-based premium adjustment factors determined strictly on claim counts. This resulted in inconsistent experience modification factors for similar sized risks that are merit rated versus experience rated. This disconnect between plans was problematic.

Fourth, under the prior plan, the mods determined for smaller risks did not give sufficient weight to poor experience because they place an extremely limiting constraint on the resulting mods. Thus, there was a reduced incentive for safety among smaller employers that may lead to inadequate protection for workers of these employers.

The New Plan

The new plan includes a simplified formula and addresses the above issues to achieve a more equitable plan among employers. This is primarily achieved by implementing the changes listed below, with detailed explanations following.

The New Formula: The new mod formula is as follows:

$$\text{Experience Rating Modification} = \frac{\text{Actual Primary Losses} + \text{Expected Excess Losses}}{\text{Expected Losses}}$$

Variable Split Point: The split point divides losses for each claim into primary and excess portions. Under the prior plan, a single split point was applicable to all risks, with the entire primary loss and a portion of the excess loss considered in the determination of the experience modification. Under the new formula, the split point will vary by risk size as determined by each risk's expected losses in the experience period. No weight will be given to actual excess losses.

Credibility: In the new plan, the actual primary losses are treated as if they are 100% credible and the actual excess losses are treated as if they are 0% credible. This simplified credibility structure works because of the variable split point approach that provides the necessary and appropriate differentiation among risks by size.

State Accident Limit ("SAL"): Under the prior plan, the SAL was determined by a formula and in later years exceeded \$500,000. Under the new plan, a SAL of \$175,000 will be used in the determination of expected loss rates ("ELRs") and D-ratios.

Changes to the ELRs and D-ratios: Using a lower state accident limit results in lower ELRs. In turn, lower ELRs will cause the D-ratios, which reflect the primary portion of expected experience period losses, to move higher for a fixed split point. Further, by introducing variable split point values, D-ratios for each classification will vary as well, contributing to additional stability for smaller risks, and allowing more of the actual experience to be reflected in the mod determination of larger risks.



Experience Rating Modification Caps: The new plan revises the prior formula cap and introduces a novel capping mechanism based on the number of claims for risks with up to 3 claims during the experience period. This approach is intended to protect smaller employers from excessive mods, while also allowing higher mods than would result under the prior formula to incentivize safety.

Eligibility and Elimination of the Merit Rating Plan: The new plan will be applicable for all risks in the state that had exposure during the experience period, regardless of size. The merit rating plan, which applies generally to risks with under \$5,000 premium, will be eliminated.

Transitional Modification Factor: During the first year of implementation, a transitional mod will apply if the new plan results in a mod that is greater than the mod that resulted under the prior formula (with updated experience) by more than 0.30.

Participation in the Interstate Rating Plan: New York will withdraw from the interstate rating plan. All risks will be rated based strictly on their New York experience. This change is needed because of the vastly different mathematical framework underlying the new plan.

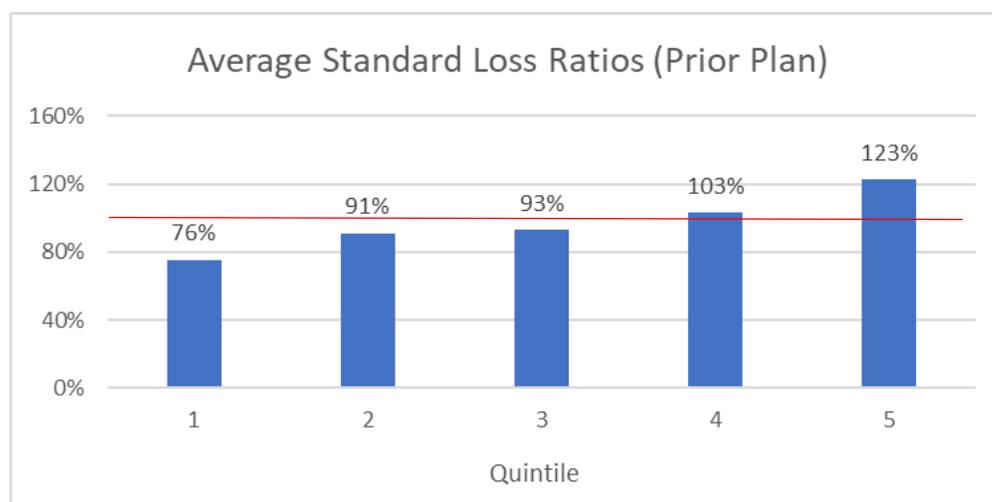
Other Changes: Additional changes under the new plan include (i) the treatment of disease claims, which will now be treated no differently than other claims, and (ii) the assignment of a minimum value of \$100 to the expected loss amount used in the mod formula calculation and in the determination of expected excess losses, which is intended to prevent rounding issues in the calculation of mods for the smallest risks.

Benefits of the New Plan: As will be demonstrated below, the changes listed above will result in mods that will increase the accuracy of workers' compensation premium charged to each New York employer, and will be more equitable across risks of all sizes and mod magnitudes. This is expected to further incentivize safety, benefiting both New York employers and their employees.

Expanded Details, Discussion, and Supporting Exhibits

Prior Plan Evaluation: A review of the prior experience rating plan revealed several problems, indicating a need for change. First, and perhaps most important, when performing a standard quintile test, standard loss ratios exhibited an upward slope as the mod increases. This is not a desirable result. For risks with the lowest experience modifications, the plan should result in significantly lower mods (moving the standard loss ratios higher), and for risks with the highest experience rating modifications, the plan should result in significantly higher mods (moving the standard loss ratios lower), to achieve an appropriate balance of equity among risks after the application of the mods. Exhibit 1 shows the average standard loss ratios over several years using the prior experience rating and merit rating formulas by quintile, with the risks assigned to each quintile based on the ascending rank of the mods. Ideally, all the resulting standard loss ratios would be equal or at least very close together and centered around 1.00, without a visible trend.

Exhibit 1



Note: Loss Ratios in Exhibit 1 are normalized to the overall loss ratio.

Second, the credibility framework underlying the prior plan resulted in a very high SAL for New York. The SAL is a function of the average claim severity² and is derived by formula within the interstate plan. Moreover, the experience that goes into a mod calculation is from first, second, and third reports of Unit Statistical Data. An examination of the experience period data revealed that very few claims were greater than the prior SAL. The prior plan assigned some credibility to excess losses. Therefore, very large losses could potentially result in high mods. However, due

² The SAL under the prior plan equals 25 times the average cost per claim during the experience period.



to the random nature of large losses, the resulting mods were often not predictive of future loss experience at the individual risk level.

Third, the prior plan resulted in inconsistent experience modification factors for similar sizes of risks that were merit rated versus experience rated. For example, the mod cap for a small experience rated risk could be 1.30, and that mod could be arrived at after experiencing just a single claim. However, a smaller merit rated risk could have 3 claims and only be assigned a 1.08 mod – the highest mod possible under the merit rating plan. This disconnect between plans is problematic as risks flip back and forth between plans from one year to the next and the same loss experience can result in very different modifications between the two plans. In addition, the experience rating premium eligibility threshold, separating risks between experience and merit rating, has not been updated in over 25 years.

Fourth, the prior experience rating plan resulted in mods (or merit rating factors) that were insufficiently responsive to worse-than-expected experience. This is especially true for smaller risks, driven by severely restrictive mod values found within the merit rating plan, along with a very low formula cap for the smallest risks in the prior experience rating plan. As a result, smaller employers had insufficient financial incentive to create safer workplaces.

Finally, the prior experience rating formula is complex, and includes credibility parameters that are often not easily understood by various stakeholders.

Following extensive review and examination of various alternatives, the new plan was determined to address the issues identified above, and achieve the appropriate balance of accuracy, stability, equity among risks, simplicity, and understandability for system stakeholders while also providing an improved safety incentive.

The New Formula: The new formula is a simplified version of the prior formula, derived by assigning no credibility to actual excess losses (above the split point) and eliminating the ballast. The use of the variable split point, actual primary losses, expected excess losses, and the novel claim capping approach eliminates the need for a ballast value, which was related to the credibility framework under the prior plan. The new formula does a better job of identifying risks by quintile before application of the mod and produces average standard loss ratios that are much more consistent between quintiles after the application of the mod. This basic formula is much simpler to digest and easier to understand than the prior plan formula. The new formula is as follows:

$$\text{Experience Rating Modification} = \frac{\text{Actual Primary Losses} + \text{Expected Excess Losses}}{\text{Expected Losses}}$$

An examination of the differentiation in the loss ratios prior to the application of the mod (manual loss ratios), shows an improvement in the segmentation power in the middle three quintiles using the new formula. Moreover, an examination of the loss ratios after the application



of the mod (standard loss ratios), shows a significant improvement in the accuracy and predictive power of the new plan mods, especially for the problematic first and fifth quintiles. Exhibit 2 displays a comparison of the loss ratios before and after the application of the mod under the prior and new plan methods.

Exhibit 2



Note: Normalized loss ratios are based on the latest five years of losses and premiums.

Credibility Structure and Optimization of the Variable Split Point: The new formula uses a variable split point in conjunction with a new approach to credibility, such that the actual primary losses are given 100% credibility, or full weight, and the actual excess losses are given no weight, or 0% credibility.

The new plan replaces the existing fixed split point and allows the split point to vary from \$1,000 to \$170,000 based on the amount of expected loss in the experience period. This is similar to the approach utilized in the California experience rating plan. This approach effectively assigns the appropriate credibility to each risk based on the risk's size. As the size of risk (in terms of expected losses) increases, more weight is given to the actual loss experience, and less weight is given to the expected excess losses. The shifting relationship between the expected primary losses and expected excess losses as a risk's size increases (with the corresponding increase in the split point) allows for more equity in the experience rating calculation.

To optimize this approach, all risks were grouped into 34 cohorts by risk size, grouping by expected losses in the experience period. Each cohort is then examined using an array of split points with the new formula. The performance of each split point was tested using a test statistic



that is defined as one minus the ratio of the variance in the standard loss ratios to the variance in the manual loss ratios. The plan is optimized when the test statistic is highest in value. This process is repeated over five sets of experience periods. To select the final split points appropriate for each cohort, a cubic curve is fit through the median of the optimal split points by cohort to smooth the randomness and noise that are found within the natural process of accidents that cause variance in the resulting mods. The smoothed curve is then used to create the table of split points to be used for each size range of expected loss. Exhibit 3 shows an example of the optimization process across the cohorts and split points. The example uses 24 cohorts and less split points than will be used in practice to illustrate the procedure.

Exhibit 3

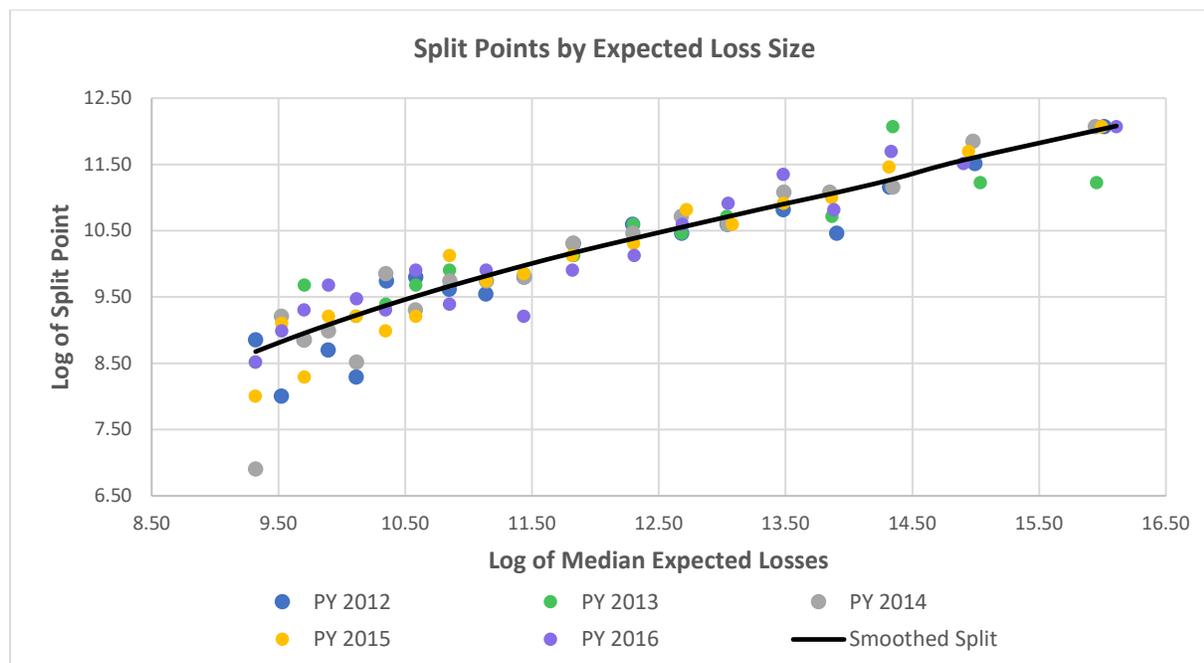
Optimal Split Point by Risk Size - PY 2016

Split Point	Cohort by Median Expected Losses																							
	1 9.9M	2 2.9M	3 1.6M	4 1M	5 700K	6 450K	7 300K	8 200K	9 130K	10 92K	11 69K	12 51K	13 40K	14 31K	15 25K	16 20K	17 16K	18 14K	19 11K	20 9K	21 6K	22 3.5K	23 1.5K	24 5K
1,000	0.10	0.11	0.12	0.15	0.15	0.16	0.18	0.23	0.20	0.24	0.20	0.21	0.20	0.29	0.28	0.23	0.32	0.32	0.44	0.37	0.44	0.40	0.34	0.25
2,000	0.15	0.16	0.20	0.25	0.21	0.24	0.29	0.34	0.30	0.37	0.31	0.33	0.34	0.41	0.30	0.37	0.50	0.55	0.72	0.56	0.60	0.57	0.48	0.29
3,000	0.18	0.21	0.25	0.33	0.25	0.29	0.36	0.41	0.37	0.46	0.39	0.42	0.41	0.54	0.37	0.50	0.68	0.64	0.82	0.69	0.69	0.66	0.56	0.38
4,000	0.22	0.26	0.30	0.38	0.30	0.34	0.43	0.49	0.42	0.55	0.46	0.50	0.52	0.60	0.40	0.59	0.79	0.71	0.80	0.71	0.77	0.73	0.63	0.17
5,000	0.25	0.29	0.33	0.40	0.34	0.39	0.48	0.55	0.47	0.65	0.54	0.60	0.57	0.67	0.56	0.67	0.86	0.81	0.84	0.78	0.73	0.77	0.72	0.38
6,000	0.25	0.32	0.37	0.43	0.38	0.43	0.52	0.59	0.54	0.78	0.63	0.65	0.63	0.71	0.61	0.73	0.88	0.86	0.84	0.73	0.75	0.75	0.67	0.11
7,000	0.29	0.36	0.40	0.44	0.41	0.46	0.56	0.63	0.60	0.82	0.68	0.71	0.68	0.79	0.63	0.78	0.89	0.87	0.76	0.60	0.75	0.70	0.70	-0.03
8,000	0.31	0.39	0.43	0.51	0.45	0.49	0.58	0.70	0.64	0.86	0.71	0.73	0.71	0.81	0.62	0.81	0.89	0.87	0.70	0.49	0.73	0.75	0.63	0.09
9,000	0.33	0.42	0.46	0.55	0.48	0.51	0.61	0.74	0.68	0.89	0.72	0.78	0.76	0.86	0.66	0.86	0.90	0.86	0.70	0.42	0.64	0.72	0.47	-0.08
10,000	0.35	0.44	0.48	0.60	0.49	0.54	0.66	0.78	0.70	0.92	0.78	0.83	0.78	0.88	0.64	0.89	0.89	0.81	0.62	0.40	0.57	0.69	0.48	-0.66
11,000	0.37	0.46	0.52	0.62	0.52	0.56	0.69	0.79	0.72	0.88	0.81	0.83	0.83	0.89	0.66	0.91	0.92	0.69	0.49	0.30	0.47	0.64	0.46	-0.64
12,000	0.38	0.48	0.54	0.64	0.55	0.60	0.71	0.82	0.73	0.80	0.82	0.87	0.87	0.81	0.68	0.93	0.87	0.67	0.42	0.30	0.40	0.60	0.31	-0.79
13,000	0.40	0.51	0.56	0.66	0.56	0.62	0.74	0.85	0.75	0.86	0.85	0.86	0.89	0.81	0.68	0.94	0.84	0.62	0.24	0.17	0.26	0.47	0.08	-0.41
14,000	0.42	0.51	0.58	0.66	0.58	0.64	0.75	0.87	0.78	0.88	0.86	0.85	0.92	0.83	0.67	0.94	0.79	0.52	0.14	0.06	0.26	0.56	0.02	-1.66
15,000	0.43	0.53	0.60	0.70	0.59	0.67	0.78	0.86	0.79	0.85	0.88	0.86	0.93	0.78	0.53	0.94	0.74	0.47	-0.01	-0.06	0.18	0.49	-0.17	-1.24
16,000	0.45	0.56	0.61	0.73	0.63	0.69	0.80	0.88	0.79	0.89	0.88	0.85	0.95	0.77	0.41	0.95	0.69	0.35	-0.16	-0.19	0.27	0.40	-0.11	-2.03
17,000	0.46	0.56	0.63	0.73	0.65	0.71	0.81	0.90	0.81	0.90	0.89	0.83	0.94	0.78	0.28	0.94	0.63	0.31	-0.32	-0.33	0.24	0.35	-0.38	-2.10
18,000	0.47	0.57	0.65	0.74	0.67	0.72	0.81	0.92	0.84	0.90	0.91	0.83	0.96	0.69	0.21	0.94	0.57	0.25	-0.62	-0.45	0.13	0.25	-0.74	-2.33
19,000	0.49	0.59	0.66	0.75	0.69	0.74	0.84	0.94	0.84	0.87	0.92	0.79	0.96	0.66	0.23	0.93	0.51	0.17	-0.78	-0.63	0.16	0.16	-0.88	-2.68
20,000	0.51	0.60	0.68	0.76	0.70	0.75	0.86	0.96	0.87	0.81	0.94	0.68	0.97	0.63	0.10	0.93	0.41	0.08	-0.99	-0.53	-0.05	0.03	-1.06	-3.10
25,000	0.56	0.67	0.73	0.83	0.76	0.83	0.93	0.97	0.84	0.52	0.93	0.32	0.96	0.31	-0.34	0.87	-0.02	-0.42	-2.29	-1.24	-0.44	-0.67	-2.13	-5.36
30,000	0.62	0.73	0.77	0.87	0.80	0.87	0.95	0.96	0.80	0.23	0.92	-0.16	0.89	0.01	-0.95	0.77	-0.49	-0.90	-3.48	-1.98	-1.03	-1.62	-2.62	-14.85
35,000	0.67	0.78	0.81	0.92	0.84	0.91	0.97	0.95	0.73	-0.09	0.79	-0.73	0.73	-0.35	-1.68	0.63	-1.04	-1.49	-4.91	-3.31	-1.59	-3.23	-3.61	-11.99
40,000	0.70	0.79	0.83	0.95	0.88	0.93	0.98	0.88	0.62	-0.68	0.67	-1.10	0.52	-0.94	-2.62	0.39	-1.66	-2.17	-6.58	-4.58	-2.95	-4.45	-5.05	-19.78
45,000	0.73	0.82	0.84	0.94	0.90	0.95	0.95	0.78	0.53	-1.33	0.42	-1.68	0.31	-1.62	-3.50	0.17	-2.55	-3.08	-8.72	-6.16	-4.49	-5.93	-6.61	-22.69
50,000	0.76	0.85	0.86	0.96	0.91	0.96	0.92	0.60	0.35	-2.16	0.23	-2.60	-0.06	-2.48	-4.82	-0.10	-3.69	-4.01	-11.42	-7.57	-5.84	-7.96	-8.94	-32.87
55,000	0.78	0.88	0.87	0.96	0.91	0.96	0.87	0.40	0.17	-3.40	-0.10	-3.52	-0.46	-3.54	-6.27	-0.41	-5.16	-5.42	-14.17	-9.99	-7.04	-10.06	-9.86	-69.19
60,000	0.79	0.90	0.87	0.95	0.93	0.96	0.81	0.16	-0.08	-4.72	-0.59	-4.74	-0.97	-4.66	-8.78	-0.79	-6.99	-6.68	-16.82	-12.32	-9.31	-12.41	-13.21	-50.74
65,000	0.79	0.92	0.87	0.94	0.95	0.93	0.75	-0.13	-0.36	-6.27	-1.18	-5.96	-1.30	-6.99	-11.04	-1.12	-8.26	-8.76	-19.53	-13.84	-12.26	-15.89	-16.39	-65.79
70,000	0.76	0.94	0.88	0.94	0.94	0.87	0.62	-0.48	-0.88	-9.84	-1.69	-7.57	-2.01	-9.27	-13.58	-1.74	-10.16	-11.37	-21.69	-16.36	-16.23	-17.60	-24.06	-68.09
75,000	0.77	0.95	0.90	0.91	0.96	0.83	0.51	-0.97	-1.36	-11.41	-2.64	-10.16	-2.87	-11.45	-15.53	-2.38	-12.97	-13.70	-25.23	-21.78	-18.29	-21.73	-27.75	-83.93
80,000	0.78	0.96	0.91	0.89	0.95	0.80	0.33	-1.78	-1.97	-13.73	-3.39	-12.56	-3.91	-14.14	-20.22	-3.12	-17.45	-16.73	-34.39	-28.60	-21.54	-27.76	-32.01	-94.23
85,000	0.79	0.97	0.90	0.86	0.96	0.75	0.06	-2.40	-2.77	-17.79	-4.27	-13.30	-5.03	-17.94	-28.70	-4.06	-21.87	-21.27	-39.32	-33.48	-27.70	-34.05	-40.05	-117.53
90,000	0.80	0.98	0.91	0.85	0.95	0.71	-0.23	-3.21	-3.92	-24.06	-5.59	-15.67	-6.63	-23.20	-37.14	-4.80	-26.11	-25.97	-53.69	-43.57	-33.87	-40.85	-57.92	-167.84
95,000	0.80	0.98	0.92	0.82	0.92	0.63	-0.42	-4.33	-4.91	-27.50	-7.95	-26.30	-8.93	-28.56	-47.73	-7.37	-31.53	-31.26	-63.17	-56.34	-38.75	-49.14	-65.54	-204.81
100,000	0.81	0.99	0.92	0.82	0.91	0.56	-0.62	-5.51	-6.66	-31.72	-10.57	-30.08	-11.84	-34.79	-56.01	-9.53	-41.42	-36.98	-77.19	-75.64	-47.40	-66.65	-96.66	-155.61
120,000	0.83	0.98	0.95	0.64	0.87	0.05	-1.92	-14.29	-15.56	-103.37	-29.79	-69.41	-31.95	-96.18	-150.56	-25.83	-95.06	-94.80	-200.29	-200.37	-128.59	-183.03	-258.36	-575.05
140,000	0.86	0.97	0.93	0.46	0.69	-0.61	-4.79	-31.67	-42.88	-279.41	-88.99	-210.06	-98.65	-296.46	-546.53	-98.46	-239.89	-257.18	-819.85	-626.85	-369.02	-600.37	-920.45	-2133.15
160,000	0.87	0.93	0.89	0.37	0.39	-1.73	-8.20																	
175,000	0.91	0.91	0.87	0.30	0.19	-3.05	-11.95																	

Statistic = 1 - variance of standard loss ratios / variance of manual loss ratios
 Optimal split point is boxed and bolded

Exhibit 4 shows the curve fitting from the median of the optimized split points. The table of split points based on expected loss is then constructed from these optimized and smoothed results.

Exhibit 4



The new credibility structure obviates the need for the tables of weights and ballast values in the new plan and allows the experience rating modification formula to be simplified.

State Accident Limit: Under the prior plan, the SAL is used both to limit the loss amounts in risks' experience, as well as to determine the expected loss rates. In recent years, SALs exceeded \$500,000. It is important to have a reasonable match between the SAL used to derive expected losses (via the expected loss rates) and the actual experience period losses. An analysis of the distribution of experience period losses, however, showed that far fewer than 1% of claims were impacted by the prior SAL. The distribution of risks by size was also examined and it was noted that most risks have standard premium much less than \$500,000. The plan's performance was then tested using various SALs, ranging between \$100,000 and \$300,000. These tests, along with the aforementioned distributions, led to the conclusion that the prior SAL was set too high. Based on the distributions examined and considering the highest split point resulting from the fitting process was \$170,000, a SAL of \$175,000 was selected. In addition, to be predictive, these larger losses would need to be repeatable in the rating period, but losses over \$200,000 are quite rare and unlikely to be repeated except for on the largest policies. This SAL will remain fixed for several years but monitored over time and changed when necessary.

In practice, the SAL will not be used to cap claims because the highest split point value is \$170,000. The SAL will be used in the determination of expected loss rates and D-ratios. Exhibit



5 shows the distribution of experience period losses and Exhibit 6 show the distribution of premiums by size.

Exhibit 5

Incurred Loss Range (\$)	Incremental		Cumulative	
	% Count	% Incurred	% Count	% Incurred
<= 50K	89.8%	23.5%	89.8%	23.5%
50K – 100K	5.6%	21.8%	95.4%	45.3%
100K – 150K	2.0%	13.2%	97.4%	58.6%
150K – 175K	0.6%	4.9%	98.0%	63.5%
175K – 200K	0.4%	4.2%	98.4%	67.7%
200K – 250K	0.5%	6.6%	98.9%	74.3%
250K – 300K	0.3%	4.8%	99.3%	79.1%
300K – 500K	0.6%	11.5%	99.8%	90.7%
> 500K	0.2%	9.3%	100.0%	100.0%
Total	100.0%	100.0%		

Exhibit 6

All Risks				
Risk Size by Manual Prem	Risk Count	Total Policy Count	Manual Premium	% Manual Premium
<= 2.5k	138,772	141,582	120,095,771	2.0%
2.5k - 5k	35,566	36,947	127,488,781	2.1%
5K - 10K	29,223	30,726	207,985,455	3.4%
10K - 25K	28,379	30,437	448,858,320	7.4%
25K - 75K	17,755	20,462	749,099,308	12.4%
75K - 150K	5,281	6,817	553,494,953	9.1%
150K - 300K	2,911	4,410	612,325,693	10.1%
300K - 500K	1,188	2,194	455,153,320	7.5%
500K - 1M	923	2,044	645,482,295	10.7%
> 1M	679	1,871	2,132,771,675	35.2%
Total	260,677	277,490	6,052,755,571	100.0%

Derivation of ELRs and D-ratios: Although the process for deriving ELRs will remain the same, (including the process to de-develop, de-trend and adjust the pure premiums to the experience period benefit level), the significantly lower SAL requires an adjustment to the procedure of removing the excess losses from the pure premiums.

The introduction of multiple split points creates the need for multiple D-ratios to be calculated, one for each split point and class combination. The wider range of D-ratios allows for larger risks



to use more of their actual loss experience in the mod calculation where it is warranted. For smaller risks, this allows for added stability by having a larger portion of their experience mod calculation based on expected excess losses. This is helpful because small risks are generally not expected to incur a single claim. When a claim does occur on a very small risk, that claim can have a significant impact on the mod. Additionally, D-ratios will be extended to three decimals to better differentiate among risk sizes in the determination of the mod.

Novel Claim Count Modification Caps: On the smallest policies, where only a fraction of a claim might be expected, the presence of a single claim could sometimes be overleveraged in the resulting experience rating mod calculation. However, some small risks that had less than one expected claim had been observed to consistently experience multiple claims year over year. To address this, a novel claim capping approach was developed that allows risks to have a mod that is capped based upon the number of claims incurred during the experience period. This enables small risks to produce higher, more appropriate mod values when incurring claims. At the same time, it protects the smallest risks from the overleveraging impact possible from the occurrence of a single or additional claim. Further, larger risks with numerous claims will not be affected by these additional caps.

The following are the experience rating maximum debit modification caps selected based on the number of claims:

Number of Claims	Experience Rating Mod Cap
1	1.12
2	1.40
3	1.75

Mods for risks with four or more claims will be subject to a formula cap which will be discussed in the next section.

The claim count caps were selected to ensure that they were above the average mod for a risk expecting one claim but would not likely impact larger sized risks where these types of caps would not be warranted. Consideration was also given to premium stability and limiting the impact from a single claim. These caps achieve the appropriate balance between incentivizing safer work environments and stabilizing premium levels for employers with very few claims. To select the caps, the average and maximum mods for risks of varying size groupings that had only one claim, two claims, or three claims respectively were examined. Exhibit 7 provides a table of cohort statistics based on risk size and number of claims. The yellow shaded section is used to identify risks that are expected to have approximately one claim. The green highlighting captures the highest average mod for these risks, while the blue highlighting captures the highest maximum mod on larger policies that are generally expected to have more than one claim. Examining the smallest risks above the yellow shading reveals the overleveraging impact of a claim when only a



partial claim is expected. The claim count mod caps were selected at values slightly higher than the green values from each claim group to function appropriately as caps for smaller risks. The caps were also selected to be higher than the shaded blue values such that larger risks are not impacted.

Exhibit 7

Risk Size	Number of Claims	Cohort Statistics			
		Risk Count	Avg Mod	Min Mod	Max Mod
Less Than 2500	1	4,872	1.36	0.90	1.97
2500 to 5K	1	5,421	1.27	0.84	1.59
5K to 10K	1	5,958	1.17	0.75	1.54
10K to 15K	1	3,310	1.09	0.68	1.45
15K to 25K	1	3,690	1.02	0.67	1.36
25K to 50K	1	2,996	0.92	0.56	1.25
50K to 75K	1	867	0.83	0.52	1.09
75K to 150K	1	607	0.75	0.43	1.01
150K to 300K	1	120	0.64	0.45	0.85
Group 2					
Less Than 2500	2	628	1.66	0.97	2.89
2500 to 5K	2	1,039	1.55	0.88	2.20
5K to 10K	2	1,730	1.38	0.77	2.14
10K to 15K	2	1,318	1.25	0.70	1.96
15K to 25K	2	1,630	1.17	0.67	1.83
25K to 50K	2	1,806	1.05	0.55	1.64
50K to 75K	2	665	0.93	0.56	1.38
75K to 150K	2	613	0.82	0.46	1.24
150K to 300K	2	134	0.70	0.46	1.01
Group 3					
Less Than 2500	3	96	1.95	1.09	3.27
2500 to 5K	3	258	1.72	0.91	2.74
5K to 10K	3	570	1.53	0.77	2.69
10K to 15K	3	486	1.39	0.71	2.48
15K to 25K	3	830	1.27	0.70	2.29
25K to 50K	3	1,101	1.14	0.65	2.02
50K to 75K	3	516	1.03	0.61	1.66
75K to 150K	3	463	0.91	0.51	1.48
150K to 300K	3	152	0.76	0.47	1.17

Formula Mod Cap: An updated formula cap is used in the new plan, which will better align the mod cap to reflect outlier mod values by risk size. Under the prior plan, mod caps on the largest risks were excessively high which rendered them meaningless. Meanwhile, smaller risks had caps



that were too low to sufficiently incentivize safety, and accordingly, equity among risks was not achieved. By way of comparison, the new mod capping process allows smaller risks to have a wider range of mods than under the prior plan, and this will better incentivize safety for smaller employers. In addition, the smaller sized risks will still be protected from inappropriately high mods by way of the novel claim count caps. The new formula cap is now more meaningful, especially for larger risks.

Under the prior plan the formula cap increased linearly as the amount of expected loss grew. The prior cap started at 1.1 and increased rather rapidly such that it was around 15.0 for a risk with approximately \$1M in expected loss. Examining the prior capping formula revealed that the caps produced for the largest risks were irrelevant as risks of this size rarely had mods over 5.0. Also, with the introduction of the novel claim capping procedure, the smaller risks could also have a higher cap. The starting point for the new formula cap was selected as 2.0 to allow for reasonable differentiation among the smallest risks. A value of 5.0 was selected as a reasonable mod cap for risks with \$1M of expected loss, given the distribution of mods for large risks. These two points then set the linear formula for the new formula mod cap and the resulting cap was more appropriate for use with both smaller and larger risks. The final formula cap, applicable for risks with four or more claims, is as follows:

$$\text{Maximum Debit Mod} = 2 + (0.000003 \times \text{expected losses})$$

Exhibit 8 shows a graphical representation of the prior and new formula caps.

Exhibit 8

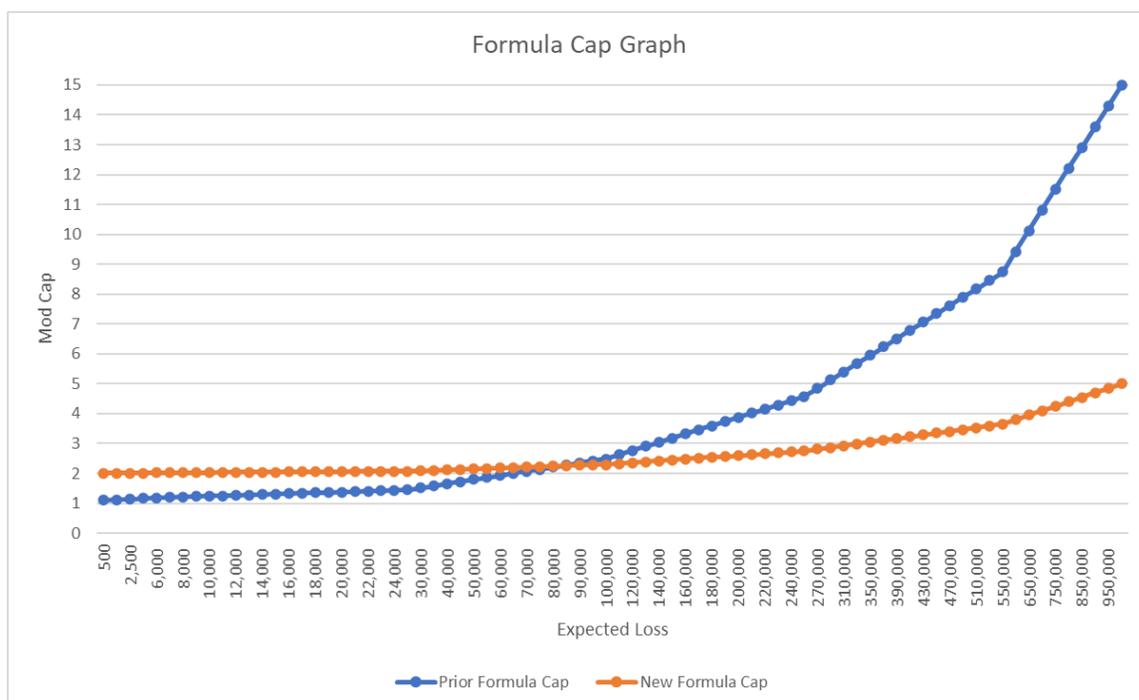
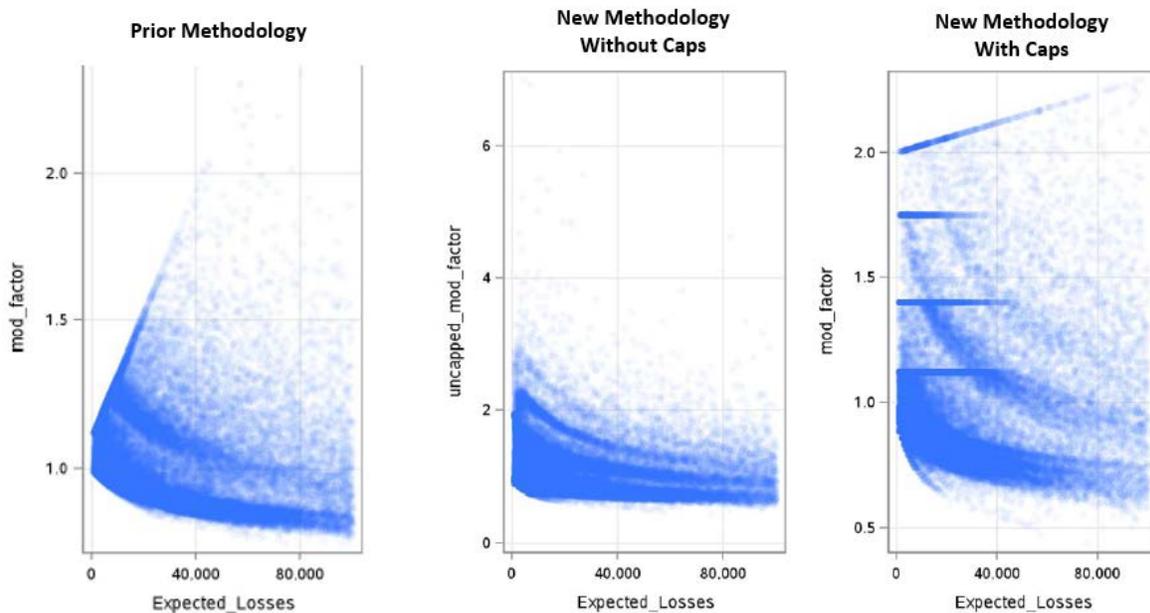


Exhibit 9 displays a visual comparison of the claim caps underlying the prior methodology to an uncapped and capped set using the new formula. Each dot represents one risk. The chart on the left displays the prior methodology, where the dark sloping line towards the top of the chart represents the risks that are capped in the prior plan. Notice the steepness of the line, rendering the cap less effective as the risk size increases. The middle chart shows the mods that would result under the new methodology prior to the application of the caps. The different scale is intended to illustrate that, before the application of the caps, a significant number of small risks can have a mod that could significantly exceed a mod of 2.0. In fact, without the cap, some would get a mod as high as 6.0 when claims experience is overleveraged on extremely small risks. The chart on the right illustrates the impact of the caps, where the dark horizontal lines represent three levels of claim count capping. Notice that the claim count caps have an impact up until around \$50,000 of expected losses but little impact thereafter as the dark lines begin to dissipate. Notice also that many risks that have two or more claims have calculated mods below the two-claim cap. Again, the sloping dark line at the top of the chart represents the risks that have more than three claims and are capped under the new formula; the slope is not as steep as under the prior method.

Exhibit 9



The new mod capping procedure, combining a claim count cap and a formula cap is appropriate for risks of all sizes.

Eligibility Threshold and Elimination of Merit Rating: The new novel claim capping procedure and revised formula cap allow for more equal and appropriate treatment of all risks. As a result,



the new plan is appropriate for risks of all sizes, and accordingly, the merit rating plan will be discontinued. The new plan will apply to all risks with exposure in the experience period.

Transition Plan: A transition plan will be implemented to mitigate significant mod increases that are the result of the change in the formula (as opposed to worsening experience). In the first year of implementation, the promulgated mod will not exceed the mod resulting from the application of the prior plan and formula with updated experience ("Prior Formula Mod") by more than 0.30. Due to the departure from the interstate rating plan (as described below), the applicable Prior Formula Mod for risks that would have been part of the interstate will be based on New York experience only.

Treatment of Catastrophic Accidents: Under the prior plan, occurrences involving two or more claims are capped at twice the SAL. Under the new plan, claims used in the experience rating calculation from multi-claim occurrences will be limited to the two largest claims from each occurrence. Each of these two claims will be limited to the split point for the risk, as described above. This procedure is intended to prevent excessive mods resulting from catastrophic events while allowing for the application of the variable split point plan. In the determination of the number of claims as part of the claim count capping procedure, each multi-claim occurrence will be counted as two claims.

Treatment of Disease Claims: Under the prior plan, loss amounts reported for disease claims were limited in a different manner than non-disease claims. Since the new plan focuses more on primary losses, the different treatment of disease claims is no longer necessary. Therefore, there will be no special treatment for disease claims. The exclusion of certain extraordinary loss events (such as COVID-19) from the experience used in the mod determination remains unchanged.

Minimum Expected Loss Amount: Applying the new formula for extremely small risks may yield inappropriate mods due to rounding in the mod determination process. To ensure the accuracy and appropriateness of the mod calculation for extremely small risks, a minimum of \$100 will be assigned to the sum of expected loss amounts in the mod formula. The determination of expected primary losses will not be affected by this procedure. However, the derivation of expected excess losses, which are normally the difference between expected losses and expected primary, will utilize a \$100 minimum for the expected loss amount. Formulaically, the derivation of expected excess losses will be as follows:

$$Ee = \text{Max}(E, \$100) - Ep$$

Interstate Rating Implications: Because the mathematical framework underlying the new plan is very different from the prior plan, the new plan necessitates the withdrawal of New York from the interstate rating plan. As a result, risks with exposure in multiple jurisdictions will have their New York mods determined strictly based on the New York experience in accordance with the new plan rules and formula.

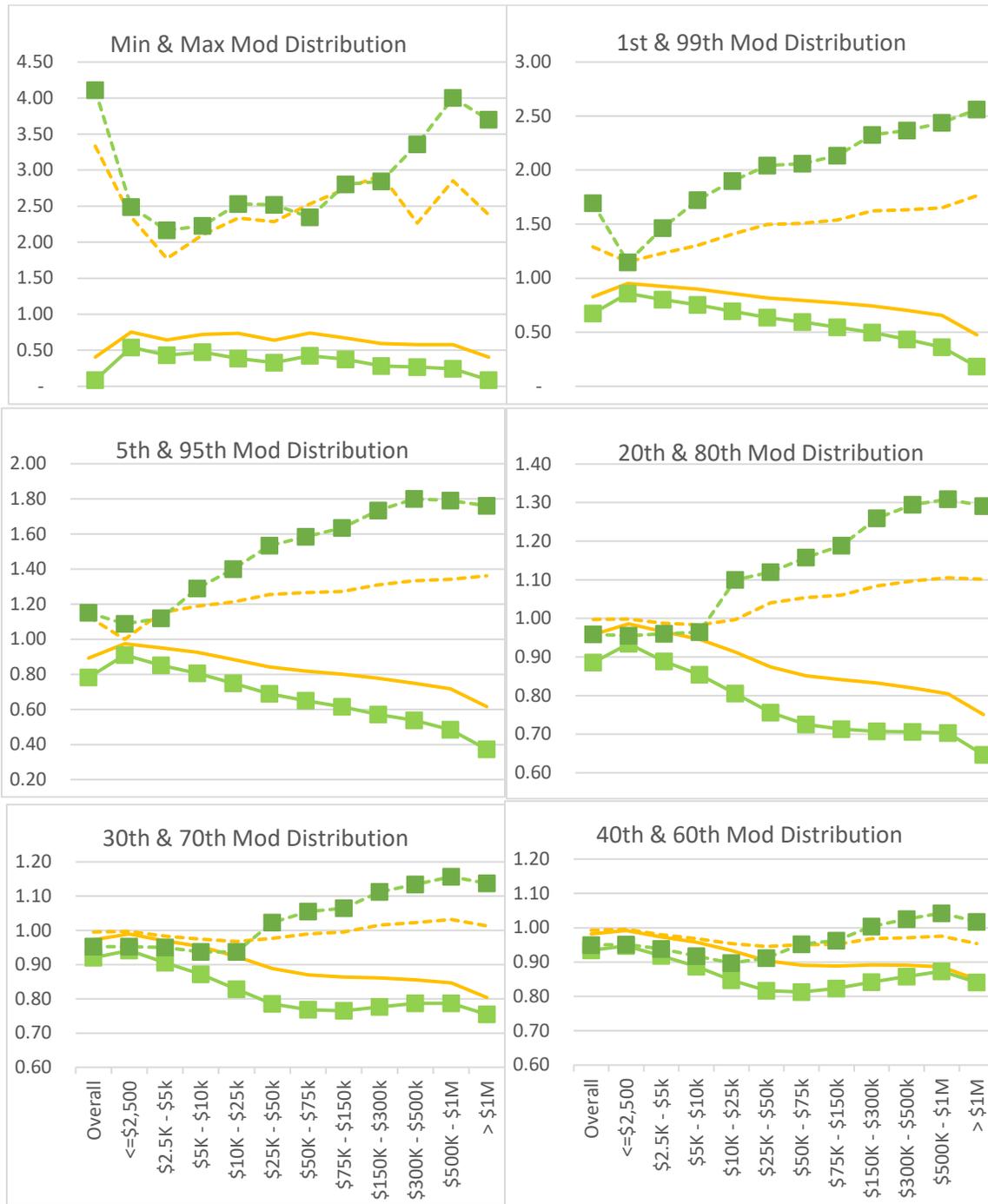


Understanding the Impact of the New Plan: There will generally be a greater spread of mod values under the new plan. This need for larger experience rating debits and credits was described in the Prior Plan Evaluation section above. Generally speaking, the new plan is expected to result in mod increases for small policies that had multiple claims or medium to large policies that had more losses that were generally larger in size or number than was expected. The new plan is expected to result in mod decreases when a high mod under the prior plan is caused by an individual large claim. The new plan is also expected to result in larger claim free credits. Exhibit 10 shows how the mods may change by premium size based on the percentile of the mod that is calculated under the prior and new plans.



Exhibit 10

— Prior Plan Lower Percent —■ New Plan Lower Percent - - - Prior Plan Higher Percent - - - ■ New Plan Higher Percent





Construction Classification Premium Adjustment Program Credibility Formula Adjustment: The Construction Classification Premium Adjustment Program (“CPAP”) formula includes a credibility factor that utilizes parameters from the prior experience rating plan. Specifically, the credibility factor is derived using the weight and ballast parameters, which are eliminated from the new experience rating plan. Therefore, the credibility factor in the CPAP formula will be derived utilizing information from the new experience rating plan. The new CPAP credibility factor, Z , for each eligible risk will be:

$$Z = \text{Minimum}\left(\left(\frac{\textit{Split Point}}{\textit{State Accident Limit}}\right)^{0.77}, 0.6\right),$$

using the split point for the specific risk and new state accident limit of \$175,000. This 0.77 factor was derived via an optimization procedure that minimized the difference between the existing credibility factor and the new credibility factors. As a result, the impact of this change on the final CPAP credits will be minimal.

Off-Balance Impact and Premium Impact: The new changes are expected to have no impact on the overall premium level in the State. The target off-balance procedure in annual loss cost filings will be maintained, adjusting plan parameters to achieve a stable average mod.