

Actuarial Committee

Meeting Agenda

Date	Time	Location	Staff Contact
February 12, 2025	9:30 AM	Microsoft Teams Webinar	Tony Milano

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To Members of the Actuarial Committee, WCIRB Members and All Interested Parties:

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- I. Approval of Minutes**
 - Meeting held on December 10, 2024
- II. Working Group Meeting Summaries**
 - None
- III. Unfinished Business**
 - A. AC21-12-07: Indemnity Claim Frequency Model
- IV. New Business**
 - A. AC25-02-01: 9/1/2025 Regulatory Filing – Experience Rating Plan Values
- V. Matters Arising at Time of Meeting**
- VI. Next Meeting Date:** March 20, 2025
- VII. Adjournment**

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Item AC21-12-07

Indemnity Claim Frequency Model

For more than a decade, the WCIRB has relied on the WCIRB Indemnity Claim Frequency Model (model) to project indemnity claim frequency for purposes of pure premium ratemaking. The model was last comprehensively validated and enhanced in 2021 using data through policy year 2018.¹ Staff has begun review of the model data and assumptions for the September 1, 2025 Pure Premium Rate Filing.

In its 2021 review of the model, the WCIRB recommended the following:

- Consider incorporating a forecast of the cumulative injury index (CII), which had been used as a key explanatory variable in the model for many years.
- In conjunction with the forecast of the CII, also apply the full indicated constant term instead of a tempered constant.
- Use all available years of data to fit the model.

This review included performance testing of non-cumulative indemnity claim frequency projections using alternative specifications of the model constant and forecast of the change in the CII.

The COVID-19 pandemic and resulting economic disruption had significant impact on indemnity claim frequency in accident years (AY) 2020, 2021, 2022 and 2023 (2023 is partial in that it only reflects claims from policy year 2022). Historically, increases in the frequency of cumulative injury claims have been strongly correlated with increases in the frequency of non-cumulative injury claims. However, in each of the last four AYs, changes in the frequency of non-cumulative and cumulative injury claims have diverged significantly, as shown in Exhibit 1.

As a result of these pandemic-related anomalies, the WCIRB's frequency projection underlying the September 1, 2024 Pure Premium Rate Filing excluded AYs 2020, 2021 and 2022 from the model fit. The projection incorporated the time series forecast of the CII and the full indicated constant.

At the meeting, staff will review the following data and assumptions for the model and solicit feedback:

- Is the current approach for estimating the change in frequency for latest accident year (AY) using change in the first partial AY appropriate?
- Is the CII still predictive of non-cumulative indemnity claim frequency change?

Frequency Change Based on Partial Data

Unit Statistical Report (USR) data is reported on a policy year basis. AYs shown in the model reflect portions of two consecutive policy years. The latest AY available for the model will be a partial AY with data from policies written in the prior policy year (PY). Currently, the model assumes that the frequency change for the full AY is same as the partial year. This frequency change is applied to the estimated frequency from the prior year to develop the estimate of frequency for the full year. This approach assumes that the emergence of claims on the second partial AY will be similar to the emergence in the first partial AY. If the changes differ by accident quarter (AQ), this will produce a biased estimate as the first partial year has high shares of reported claims from the first and second quarter and low shares from the third and fourth quarter.

¹ See Item AC21-12-07, Indemnity Claim Frequency Model, from the December 9, 2021 Actuarial Committee meeting.

Staff reviewed an alternate approach that assumes the change at an AQ level is the same in the partial and full year. The approach assumes the quarterly frequency change of the first half of AY is predictive of the full year change for each quarter and applies these changes to the prior full AY quarterly claim counts to estimate the frequency change for the latest AY. Exhibit 2 shows the historical annual frequency change and performance of each approach using absolute error.

Cumulative Injury Index in Frequency Model Regression

The CII has been a key variable in the model because, historically, increases in the frequency of cumulative injury claims have been strongly correlated with increases in the frequency of non-cumulative injury claims. However, the correlation between frequency of cumulative injuries and non-cumulative injuries has weakened over time as shown in Exhibit 3. Since AY 2018, the rolling five-year average of the correlation between changes in counts of cumulative and non-cumulative injuries has been negative. Given the decrease in correlation, staff compared the performance of forecasted frequency using three different sets of assumptions: forecasted changes in the CII using the time series model (With CII), forecasted change of 0 for the CII (0 CII), and a model fit without the (W/O CII). The results are shown in Exhibit 4. Consistent with the last rate filing, AYs 2020, 2021 and 2022 are excluded from the regression in all three versions.

Feedback

Since AY 2019, the changes in the frequency of cumulative and non-cumulative claims have been significantly and directionally different in each year. As this is a core assumption of the current Indemnity Claim Frequency Model, staff is investigating potential adjustments to the model assumptions to project indemnity claim frequency for the September 1, 2025 Pure Premium Rate Filing. Staff will solicit feedback for potential alternatives to be investigated.

**Exhibit 1: Preliminary 2024 Accident Year Indemnity Claim Frequency Model
As of PY 2022 Preliminary USR & Sep 2024 UCLA**

AY	Intra-Class Indemnity Frequency per \$M Exposure at PY 2023 Level			Annual % Changes Intra-Class Ind Freq	Intra-Class Indemnity Frequency per \$M Exposure at PY 2023 Level			Annual Log Differences		Economic Variables (1st Prin. Comp.)
	Total	Cumulative	Non-cum.	Total	Annual Log Differences		AY Indemnity Benefit Level	Cumulative Injury Index		
					Total	Cumulative			Non-cum.	
1962	0.230	0.008	0.222	----	----	----	----	0.000	----	----
1963	0.234	0.008	0.226	2.0%	0.020	----	----	0.000	----	-0.030
1964	0.235	0.008	0.227	0.3%	0.003	----	----	0.000	----	0.003
1965	0.234	0.008	0.226	-0.3%	-0.003	----	----	0.000	----	0.020
1966	0.238	0.008	0.230	1.7%	0.017	----	----	0.000	----	0.190
1967	0.243	0.008	0.234	1.8%	0.017	----	----	0.000	----	-0.147
1968	0.246	0.009	0.237	1.4%	0.014	----	----	0.000	----	0.058
1969	0.253	0.009	0.244	2.7%	0.026	----	----	0.049	----	0.043
1970	0.257	0.009	0.248	1.8%	0.018	----	----	0.000	----	-0.338
1971	0.261	0.009	0.252	1.5%	0.015	----	----	0.000	----	-0.188
1972	0.250	0.009	0.241	-4.3%	-0.044	----	----	0.162	----	0.158
1973	0.267	0.009	0.258	7.0%	0.067	----	----	0.048	----	0.088
1974	0.319	0.011	0.308	19.2%	0.176	----	----	0.041	----	-0.036
1975	0.358	0.012	0.346	12.5%	0.118	----	----	0.058	----	-0.300
1976	0.361	0.012	0.349	0.8%	0.008	----	----	0.000	----	0.083
1977	0.377	0.013	0.364	4.3%	0.042	----	----	0.063	----	0.111
1978	0.344	0.012	0.332	-8.7%	-0.091	----	----	0.001	----	0.168
1979	0.346	0.011	0.334	0.5%	0.005	-0.053	0.007	0.000	-0.060	0.133
1980	0.323	0.010	0.313	-6.5%	-0.068	-0.132	-0.066	0.000	-0.066	-0.082
1981	0.312	0.010	0.302	-3.5%	-0.036	-0.028	-0.036	0.033	0.008	-0.079
1982	0.307	0.011	0.295	-1.6%	-0.016	0.153	-0.022	0.000	0.175	-0.294
1983	0.326	0.014	0.312	6.2%	0.060	0.214	0.054	0.352	0.160	0.029
1984	0.357	0.018	0.339	9.5%	0.091	0.235	0.084	0.081	0.151	0.221
1985	0.364	0.020	0.344	2.0%	0.020	0.138	0.014	0.000	0.124	0.080
1986	0.355	0.021	0.334	-2.4%	-0.024	0.039	-0.028	0.000	0.067	0.077
1987	0.361	0.022	0.339	1.5%	0.015	0.053	0.013	0.000	0.041	0.150
1988	0.363	0.025	0.339	0.7%	0.007	0.104	0.000	0.000	0.104	0.087
1989	0.372	0.030	0.342	2.5%	0.024	0.212	0.009	0.000	0.203	0.044
1990	0.406	0.042	0.363	9.0%	0.087	0.337	0.061	0.046	0.276	-0.121
1991	0.407	0.050	0.357	0.3%	0.003	0.166	-0.018	0.071	0.184	-0.293
1992	0.365	0.039	0.327	-10.3%	-0.108	-0.263	-0.089	0.023	-0.174	-0.186
1993	0.332	0.032	0.299	-9.2%	-0.097	-0.175	-0.088	0.013	-0.088	-0.022
1994	0.297	0.027	0.269	-10.5%	-0.111	-0.167	-0.105	-0.057	-0.061	0.106
1995	0.296	0.028	0.268	-0.3%	-0.003	0.009	-0.004	0.061	0.013	0.092
1996	0.276	0.023	0.252	-6.8%	-0.070	-0.165	-0.061	0.053	-0.104	0.074
1997	0.267	0.023	0.244	-3.3%	-0.033	-0.026	-0.034	0.096	0.008	0.137
1998	0.257	0.022	0.234	-3.7%	-0.038	-0.020	-0.040	0.066	0.019	0.078
1999	0.261	0.023	0.238	1.5%	0.015	0.010	0.015	0.058	-0.005	0.127
2000	0.271	0.025	0.246	4.0%	0.039	0.101	0.033	0.040	0.068	0.065
2001	0.252	0.028	0.224	-6.9%	-0.072	0.106	-0.091	-0.003	0.197	-0.104
2002	0.245	0.034	0.211	-2.8%	-0.029	0.196	-0.061	-0.007	0.257	-0.212
2003	0.237	0.035	0.203	-3.2%	-0.032	0.025	-0.042	0.060	0.067	-0.019
2004	0.197	0.025	0.172	-16.8%	-0.184	-0.321	-0.163	-0.065	-0.158	0.103
2005	0.170	0.018	0.152	-13.6%	-0.147	-0.343	-0.121	-0.398	-0.222	0.147
2006	0.161	0.015	0.146	-5.6%	-0.058	-0.204	-0.042	0.051	-0.163	0.094
2007	0.158	0.014	0.144	-1.7%	-0.017	-0.042	-0.015	0.016	-0.027	-0.080
2008	0.154	0.014	0.140	-2.7%	-0.027	-0.012	-0.029	0.049	0.017	-0.316
2009	0.153	0.016	0.138	-0.3%	-0.003	0.133	-0.017	0.069	0.150	-0.461
2010	0.167	0.018	0.149	8.8%	0.085	0.115	0.081	0.016	0.034	-0.077
2011	0.169	0.018	0.151	1.2%	0.012	0.028	0.010	0.000	0.017	0.047
2012	0.177	0.020	0.157	4.7%	0.046	0.115	0.037	0.003	0.077	0.125
2013	0.178	0.023	0.154	0.4%	0.004	0.131	-0.014	0.019	0.145	0.153
2014	0.178	0.024	0.154	0.2%	0.002	0.046	-0.005	0.070	0.051	0.179
2015	0.175	0.024	0.151	-1.5%	-0.015	0.008	-0.018	0.000	0.026	0.194
2016	0.171	0.025	0.145	-2.6%	-0.026	0.033	-0.036	0.000	0.069	0.127
2017	0.167	0.024	0.144	-2.0%	-0.020	-0.073	-0.011	0.000	-0.062	0.130
2018	0.167	0.022	0.145	-0.4%	-0.004	-0.055	0.004	0.000	-0.060	0.127
2019	0.170	0.023	0.146	1.7%	0.017	0.047	0.012	0.000	0.034	0.070
2020	0.155	0.025	0.130	-8.7%	-0.091	0.068	-0.119	0.000	0.188	-0.936
2021	0.166	0.021	0.144	6.9%	0.067	-0.155	0.104	0.000	-0.259	0.325
2022	0.155	0.023	0.132	-6.2%	-0.064	0.079	-0.087	0.000	0.166	0.536
2023	0.162	0.032	0.130	4.9%	0.047	0.268	-0.001	0.000	0.269	-0.096
2024	0.157	0.030	0.127	-3.4%	-0.034	-0.016	-0.039	0.000	0.023	-0.098
2025	0.149	0.027	0.122	-4.8%	-0.049	-0.101	-0.037	0.000	-0.064	0.089
2026	0.142	0.024	0.118	-5.0%	-0.051	-0.112	-0.039	0.000	-0.073	0.094
2027	0.135	0.022	0.113	-5.0%	-0.051	-0.087	-0.044	0.000	-0.044	-0.014

Source: WCIRB Unit Statistical Data excluding Covid-19 Claims

Exhibit 2: Changes in Indemnity Claim Frequency By Accident Year and by Accident Quarter

Cumulative Claim Frequency

AY	Full AY		First Partial AY			First Partial AY by AQ	
	Frequency	Annual Change	Frequency	Change	Absolute Error	Change	Absolute Error
2013	0.022		0.024				
2014	0.023	4.6%	0.026	8.6%	4.0%	8.4%	3.8%
2015	0.024	0.8%	0.025	-1.7%	2.4%	-3.2%	4.0%
2016	0.024	3.3%	0.025	-3.5%	6.8%	-4.9%	8.2%
2017	0.023	-7.3%	0.027	7.8%	15.1%	5.2%	12.5%
2018	0.022	-5.5%	0.023	-14.3%	8.8%	-4.7%	0.8%
2019	0.023	4.7%	0.025	9.4%	4.7%	15.8%	11.1%
2020	0.026	12.5%	0.030	18.5%	6.1%	-5.5%	18.0%
2021	0.022	-14.2%	0.024	-24.1%	9.9%	-17.7%	3.6%
2022	0.024	7.9%	0.025	3.5%	4.4%	8.0%	0.1%
2023			0.032	26.8%		16.5%	

Non-Cumulative Claim Frequency

AY	Full AY		First Partial AY			First Partial AY by AQ	
	Frequency	Annual Change	Frequency	Change	Absolute Error	Change	Absolute Error
2013	0.149		0.147	-	-	-	-
2014	0.149	-0.5%	0.146	-0.5%	0.0%	1.4%	1.9%
2015	0.146	-1.8%	0.145	-0.7%	1.2%	-2.0%	0.1%
2016	0.141	-3.6%	0.140	-4.2%	0.6%	-4.7%	1.1%
2017	0.139	-1.1%	0.136	-2.8%	1.7%	-2.1%	1.0%
2018	0.140	0.4%	0.136	0.0%	0.5%	0.9%	0.5%
2019	0.142	1.2%	0.136	0.3%	0.9%	5.7%	4.4%
2020	0.133	-6.3%	0.123	-9.7%	3.4%	-18.9%	12.6%
2021	0.149	11.7%	0.143	14.9%	3.2%	14.8%	3.0%
2022	0.137	-8.7%	0.130	-10.0%	1.4%	-9.9%	1.2%
2023			0.130	-0.1%		-2.8%	

Change in Cumulative Claim Frequency by AQ for First Partial AY

AY	1	2	3	4	Total
2013					
2014	13.0%	4.8%	44.3%	-28.9%	8.4%
2015	2.5%	-21.4%	-0.8%	7.9%	-3.2%
2016	-7.1%	24.9%	-47.4%	12.2%	-4.9%
2017	16.8%	-31.3%	43.4%	-20.6%	5.2%
2018	3.6%	23.0%	-35.1%	-15.3%	-4.7%
2019	-49.4%	-28.3%	84.0%	59.9%	15.8%
2020	82.5%	-2.1%	-56.6%	-40.6%	-5.5%
2021	-56.7%	31.4%	-33.2%	19.6%	-17.7%
2022	-3.2%	-24.2%	17.5%	43.2%	8.0%
2023	26.6%	62.5%	27.0%	-51.5%	16.5%

Change in Non-Cumulative Claim Frequency by AQ for First Partial AY

AY	1	2	3	4	Total
2013					
2014	2.1%	-1.4%	32.0%	-31.7%	1.4%
2015	5.3%	-22.5%	-1.7%	13.1%	-2.0%
2016	-10.4%	25.9%	-46.6%	16.4%	-4.7%
2017	-5.8%	-32.4%	43.5%	-17.0%	-2.1%
2018	31.2%	27.4%	-31.1%	-22.4%	0.9%
2019	-52.3%	-38.1%	67.5%	41.1%	5.7%
2020	34.5%	-23.7%	-56.6%	-24.0%	-18.9%
2021	-0.7%	59.7%	-14.4%	25.0%	14.8%
2022	-12.6%	-35.1%	-1.2%	9.7%	-9.9%
2023	-6.1%	34.2%	0.5%	-43.6%	-2.8%

Exhibit 3: Changes in Cumulative and Non-Cumulative Indemnity Claim Counts by Accident Year

AY	% Change in Cumulative Counts	% Change in Non-Cumulative Counts	Cumulative Correlation of Change	Correlation (rolling 5 years)	CII	Change in CII	Mean of CII (rolling 5 years)	Variance of CII (rolling 5 years)	% Change in Mean of CII (rolling 5 years)	% Change in Variance of CII (rolling 5 years)
1978					0.0358					
1979	-3.6%	2.4%			0.0337	-0.0596				
1980	-9.3%	-3.0%	1.0000		0.0316	-0.0664				
1981	-4.5%	-5.3%	0.3760		0.0318	0.0084				
1982	13.2%	-5.0%	(0.3211)		0.0379	0.1753	0.0342	0.0000		
1983	25.0%	6.6%	0.5382	0.5382	0.0445	0.1596	0.0359	0.00002	5.1%	303.5%
1984	33.7%	15.0%	0.7840	0.8519	0.0518	0.1514	0.0395	0.00006	10.0%	153.8%
1985	19.3%	5.4%	0.7926	0.8984	0.0586	0.1241	0.0449	0.00009	13.7%	51.7%
1986	7.3%	0.4%	0.7939	0.8845	0.0627	0.0667	0.0511	0.00008	13.7%	-10.4%
1987	8.3%	4.0%	0.7850	0.9213	0.0653	0.0407	0.0566	0.00006	10.7%	-29.9%
1988	15.2%	3.8%	0.7864	0.9541	0.0724	0.1039	0.0622	0.00005	9.9%	-17.5%
1989	27.2%	3.9%	0.7584	0.5545	0.0887	0.2026	0.0695	0.00011	11.9%	137.6%
1990	37.3%	4.2%	0.7025	0.5506	0.1169	0.2763	0.0812	0.00040	16.8%	258.4%
1991	14.8%	-4.5%	0.6529	0.2967	0.1406	0.1845	0.0968	0.00080	19.2%	98.3%
1992	-27.7%	-14.0%	0.7875	0.9217	0.1181	-0.1742	0.1074	0.00058	10.9%	-27.5%
1993	-22.6%	-15.5%	0.8352	0.9781	0.1082	-0.0878	0.1145	0.00028	6.7%	-51.2%
1994	-16.6%	-11.3%	0.8533	0.9852	0.1018	-0.0614	0.1171	0.00017	2.3%	-38.3%
1995	-0.4%	-1.7%	0.8516	0.8695	0.1031	0.0132	0.1144	0.00021	-2.4%	18.2%
1996	-10.1%	-0.3%	0.8287	0.8790	0.0929	-0.1040	0.1048	0.00007	-8.3%	-66.6%
1997	2.4%	1.6%	0.8224	0.9063	0.0937	0.0078	0.0999	0.00003	-4.7%	-50.3%
1998	3.1%	1.1%	0.8188	0.8327	0.0955	0.0192	0.0974	0.00002	-2.5%	-47.5%
1999	3.1%	3.6%	0.8074	0.5250	0.0950	-0.0055	0.0960	0.00001	-1.4%	-25.1%
2000	9.2%	2.0%	0.8077	0.6884	0.1016	0.0678	0.0957	0.00001	-0.3%	-29.1%
2001	17.0%	-3.9%	0.7798	(0.8475)	0.1238	0.1972	0.1019	0.00013	6.4%	1239.2%
2002	19.8%	-7.3%	0.7193	(0.9310)	0.1600	0.2568	0.1152	0.00061	13.0%	382.0%
2003	-0.9%	-7.3%	0.7207	(0.2827)	0.1710	0.0667	0.1303	0.00093	13.1%	52.0%
2004	-28.2%	-15.9%	0.7637	0.7376	0.1461	-0.1577	0.1405	0.00063	7.8%	-32.7%
2005	-27.6%	-9.6%	0.7733	0.8051	0.1170	-0.2219	0.1436	0.00043	2.2%	-32.1%
2006	-17.7%	-3.2%	0.7614	0.4188	0.0995	-0.1626	0.1387	0.00071	-3.4%	67.5%
2007	-4.5%	-1.9%	0.7590	0.6594	0.0968	-0.0272	0.1261	0.00081	-9.1%	14.2%
2008	-3.4%	-5.0%	0.7601	0.7877	0.0984	0.0166	0.1116	0.00035	-11.5%	-56.8%
2009	7.3%	-7.7%	0.7441	0.2281	0.1144	0.1504	0.1052	0.00007	-5.7%	-78.8%
2010	8.0%	4.4%	0.7413	0.1788	0.1183	0.0336	0.1055	0.00008	0.2%	8.4%
2011	3.5%	1.7%	0.7385	0.2545	0.1204	0.0174	0.1096	0.00010	4.0%	24.3%
2012	12.8%	4.5%	0.7414	0.5265	0.1300	0.0773	0.1163	0.00011	6.1%	5.8%
2013	20.1%	3.9%	0.7471	0.3821	0.1503	0.1447	0.1267	0.00017	8.9%	55.7%
2014	7.8%	2.4%	0.7469	0.6030	0.1581	0.0508	0.1354	0.00026	6.9%	54.8%
2015	3.9%	1.2%	0.7453	0.8554	0.1623	0.0261	0.1442	0.00027	6.5%	3.3%
2016	8.3%	1.1%	0.7459	0.7849	0.1739	0.0690	0.1549	0.00021	7.4%	-19.7%
2017	-4.9%	1.2%	0.7362	0.8249	0.1634	-0.0623	0.1616	0.00006	4.3%	-72.3%
2018	-3.1%	2.9%	0.7239	(0.1461)	0.1539	-0.0597	0.1623	0.00004	0.5%	-24.3%
2019	5.1%	1.5%	0.7232	(0.4571)	0.1593	0.0344	0.1626	0.00004	0.1%	-4.0%
2020	2.9%	-14.7%	0.6882	(0.1683)	0.1922	0.1879	0.1685	0.00018	3.7%	327.0%
2021	-12.0%	14.0%	0.5888	(0.7426)	0.1483	-0.2591	0.1634	0.00023	-3.0%	27.2%
2022	22.4%	3.8%	0.5947	(0.2878)	0.1750	0.1655	0.1658	0.00025	1.4%	9.3%
2023	-39.5%	-57.7%			0.2500	0.2688	0.1850	0.00128	11.6%	401.3%
PY2021inAY2022	-22.6%	1.3%			0.1910					

Source: WCIRB Unit Statistical Data excluding Covid-19 Claims

Exhibit 4: Performance of Frequency Model Regression using Alternative Assumptions for the CII

Cumulative Injury Frequency		Latest AY with Data Available											
		2018			2019			2020			2021		
Forecast AY	Actual	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII
2018	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222	0.0222
2019	0.0233	0.0220	0.0231	0.0226	0.0233	0.0233	0.0233	0.0233	0.0233	0.0233	0.0233	0.0233	0.0233
2020	0.0250	0.0196	0.0212	0.0249	0.0208	0.0207	0.0257	0.0250	0.0250	0.0250	0.0250	0.0250	0.0250
2021	0.0214	0.0198	0.0211	0.0182	0.0210	0.0206	0.0188	0.0253	0.0205	0.0182	0.0214	0.0214	0.0214
2022	0.0231	0.0205	0.0211	0.0227	0.0218	0.0207	0.0235	0.0262	0.0207	0.0228	0.0221	0.0279	0.0267

Absolute Error %		Latest AY with Data Available											
		2018			2019			2020			2021		
Forecast AY		0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII
2019		5.8%	1.0%	3.1%									
2020		21.5%	14.9%	0.1%	16.8%	17.0%	3.1%						
2021		7.2%	1.5%	14.9%	1.6%	3.8%	12.1%	18.3%	3.9%	14.7%			
2022		11.3%	8.6%	1.9%	5.9%	10.6%	1.5%	13.2%	10.7%	1.5%	4.3%	20.4%	15.4%

Non-Cumulative Injury Frequency		Latest AY with Data Available											
		2018			2019			2020			2021		
Forecast AY	Actual	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII
2018	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445	0.1445
2019	0.1463	0.1427	0.1412	0.1417	0.1463	0.1463	0.1463	0.1463	0.1463	0.1463	0.1463	0.1463	0.1463
2020	0.1299	0.1273	0.1300	0.1297	0.1303	0.1346	0.1338	0.1299	0.1299	0.1299	0.1299	0.1299	0.1299
2021	0.1441	0.1289	0.1289	0.1227	0.1321	0.1337	0.1267	0.1316	0.1290	0.1230	0.1441	0.1441	0.1441
2022	0.1322	0.1333	0.1294	0.1296	0.1367	0.1345	0.1341	0.1363	0.1297	0.1301	0.1493	0.1450	0.1526

Absolute Error %		Latest AY with Data Available											
		2018			2019			2020			2021		
Forecast AY		0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII	0 CII	W/O CII	With CII
2019		2.5%	3.5%	3.1%									
2020		2.0%	0.1%	0.1%	0.4%	3.7%	3.1%						
2021		10.6%	10.6%	14.9%	8.4%	7.3%	12.1%	8.7%	10.5%	14.7%			
2022		0.9%	2.1%	1.9%	3.4%	1.7%	1.5%	3.1%	1.9%	1.5%	12.9%	9.7%	15.4%

Source: WCIRB Unit Statistical Data excluding Covid-19 Claims

WCIRB Indemnity Claim Frequency Model

Item AC25-02-01

9/1/2025 Regulatory Filing – Experience Rating Plan Values

An analysis of the indicated experience rating off-balance factor and the factors used to generate proposed expected loss rates for policies incepting between September 1, 2025 and August 31, 2026 will be presented at the meeting. The methodology to produce the indicated experience rating off-balance factor and expected loss rates effective September 1, 2025 that will be presented at the meeting is summarized below.

Off-Balance Factor

The calculation of the indicated off-balance factor is based on the average modification and average credibility assigned to the experience of all experience rated employers for recent policy years. This information is based on the WCIRB's experience modification records and reflects the actual modifications issued for each of those policy years. The most recent three policy inception periods are used in the computation of the indicated September 1, 2025 off-balance factor (September 1, 2022 to August 31, 2023, September 1, 2023 to August 31, 2024, and September 1, 2024 to August 31, 2025 (preliminary)). This information is based on the WCIRB's experience modification records and reflects the actual modifications issued for each of those policy periods. Based on this information, the ratio of actual to expected losses for experience rated employers in each of these periods is estimated.

The ratios for each of these policy periods are then adjusted by (a) the off-balance factor that was used to adjust each period's expected loss rates, (b) the adjustment that was made to the expected loss rates to produce the target off-balance factor for that period (if applicable), (c) the adjustment that was made to each historical period's expected loss rates to reflect the impact of California Insurance Code Section 11751.9 corrections based on closed claim values that are significantly below the values of the claims that were used in an experience modification computation, and (d) the hindsight correction factor to the expected losses for each of these policy periods, which is intended to adjust for any difference in projected expected loss rates and the level of losses that actually underlies a year's experience modifications.¹

The ratios, after adjustment as described above, represent the estimated ratios of actual to expected losses for experience rated employers in which the total actual losses for all employers equal the total expected losses for the experience period. The projected ratio of actual to expected losses for experience rated employers is selected as the weighted average of the three periods' adjusted ratios, with full weight given to the final and full year periods of September 1, 2022 to August 31, 2023 and September 1, 2023 to August 31, 2024, and 50% weight given to the preliminary and partial period for September 1, 2024 to August 31, 2025.² The projected average credibility for experience rated employers is selected as the average credibility for the most recent completed annual policy period of experience. In the September 1, 2025 Regulatory Filing, this represents policies incepting between September 1, 2023 and August 31, 2024.

The computation of the indicated off-balance factor is based on the projected ratio of actual to expected losses and the projected average credibility computed as described above as well as the ratio of experience rated premium to total premium. This ratio is based on a comparison of the premiums at the advisory pure premium rate level for experience rated employers with those for all employers including employers who are not experience rated based on the most recent three policy years of experience (policy years 2020 through 2022 for the September 1, 2025 Regulatory Filing). The computation of the

¹ The hindsight correction factor for each period is computed as the ratio of the statewide weighted average of the promulgated expected loss rates (adjusted to remove that period's off-balance factor and its related adjustment, if any, and the adjustment to reflect the impact of California Insurance Code Section 11751.9 rerates) to the hindsight weighted average statewide ratio of losses (excluding first \$250 and limited to \$175,000) to payroll for the policy years and report levels reflected in that period's experience modifications.

² The September 1, 2024 to August 31, 2025 period is preliminary and partial in that it only reflects experience modifications for policies incepting through May 2025.

indicated off-balance factor is derived from the relationship of the off-balance factor as the reciprocal of the average modification over all risks.³

Expected Loss Rates

The expected loss rates represent the average losses per \$100 of payroll by classification estimated to be reflected in experience rating calculations for policies incepting between September 1, 2025 and August 31, 2026. They are computed by comparing the average limited loss to payroll ratio included for each classification as computed in the WCIRB's proposed September 1, 2025 classification relativities with the average level of losses per \$100 of payroll anticipated to be used in September 1, 2025 to August 31, 2026 experience modification calculations.

The WCIRB's methodology to determine classification expected loss rates uses adjustment factors based on the experience of classifications grouped in accordance with the North American Industry Classification System (NAICS). The average adjustment factors on a statewide, all classifications combined basis are first computed to ensure that the factors computed by NAICS sector groupings balance to the statewide, all classifications combined expected loss rate level. These factors begin with the calculation of the average indicated ratio of limited losses to \$100 of payroll based on the total statewide payroll generated on policies incepting between December 1, 2020 and November 30, 2022 (the most recent two years used in the September 1, 2025 classification relativities) and the indicated limited loss to payroll ratios for each classification, segregated between the indemnity and medical components.

Next, the estimated average ratio of losses to \$100 of payroll for the time period and maturity level to be reflected in September 1, 2025 to August 31, 2026 experience modifications is computed. For the September 1, 2025 Regulatory Filing, this generally reflects policies incepting between September 1, 2021 and August 31, 2022 at third unit statistical report level, policies incepting between September 1, 2022 and August 31, 2023 at second unit statistical report level, and policies incepting between September 1, 2023 and August 31, 2024 at first unit statistical report level. These estimated ratios are determined as follows:

- The average expected ratios of indemnity and medical losses per \$100 of payroll for policies incepting between September 1, 2021 and August 31, 2022 are determined by developing the first unit statistical report level (18 months from policy inception) ratios from these policies to third unit statistical report level (42 months from policy inception).⁴ The development factors used to develop these ratios are based on the most recently available accident year experience converted to reflect the September 1, 2021 to August 31, 2022 policy inception period.⁵
- The average expected ratios of indemnity and medical losses per \$100 of payroll for policies incepting between September 1, 2022 and August 31, 2023 are determined by developing available data at first unit statistical report level (18 months from policy inception) to second unit statistical report level (30 months from policy inception).⁶ For the average expected ratios for policies incepting between September 1, 2022 and August 31, 2023, experience from policies incepting between April 1, 2022 and March 31, 2023 are used and trended forward five months to reflect the period of experience underlying policies incepting between September 1, 2022 and

³ That is $OBF = 1 / (\text{Avg. Mod All Risks})$, where $\text{Avg. Mod All Risks} = (\text{Avg. Mod Rated Risks} \times \text{Premium Share of Rated Risks}) + (1.0 \times \text{Premium Share of Non-rated Risks})$, and where the formula for the average modification for rated risks is as follows: $\text{Avg. Mod Rated Risks} = [(\text{Avg. Ratio of Actual to Expected}) \times (1 / OBF) \times (\text{Avg. Credibility})] + [1.0 \times (1 - \text{Avg. Credibility})]$.

⁴ Claims arising out of a diagnosis of COVID-19 are excluded from this period as these claims are not included in the computation of experience modifications.

⁵ For development from 18 to 21 months, a weighted average based on 75% weight applied to accident year 2022 development and 25% weight applied to accident year 2023 development is used. For development from 21 to 33 months, accident year 2022 development is used. For development from 33 to 42 months, accident year 2021 development is used. See Exhibits 9.1 and 9.2 of Item AC24-12-01 of the December 10, 2024 WCIRB Actuarial Committee Agenda for the development factors used.

⁶ Claims arising out of a diagnosis of COVID-19 are excluded from this period as these claims are not included in the computation of experience modifications.

August 31, 2023.⁷ The development factors used to develop these ratios are based on the most recently available accident year experience converted to the September 1, 2022 to August 31, 2023 policy inception period.⁸

- The average expected ratios of indemnity and medical losses per \$100 of payroll for policies incepting between September 1, 2023 and August 31, 2024 are estimated from the prior year's ratios (ratios for policies incepting between September 1, 2022 and August 31, 2023), adjusted for the change in the average accident year loss ratios estimated in the WCIRB's most recent evaluation of accident year experience⁹—with the premiums adjusted to a common basis but with the impact of projected wage inflation removed—and converted to a September 1 to August 31 policy period basis using a standard actuarial parallelogram approach to convert accident year experience to policy periods. COVID-19 claims that occur September 1, 2024 and later are included in the computation of experience modifications, which impacts approximately one-half of this policy period. Staff will discuss adjustments to expected loss rates to include the experience of COVID-19 claims at the meeting.

The average of the expected loss to payroll ratios for each of the three years of the experience rating period computed as described above are adjusted by three additional factors: (1) the selected experience rating off-balance correction factor to be reflected in September 1, 2025 to August 31, 2026 expected loss rates, (2) the factor to reflect the individual loss limitation of \$175,000 and the elimination of the first \$250 of each claim in the experience rating calculation,¹⁰ and (3) the factor to reflect the estimated average impact of experience modification revisions resulting from Insurance Code Section 11751.9 rerates. The product of these factors represents the average adjustments across all NAICS Sector groupings to produce the average indicated September 1, 2025 to August 31, 2026 expected loss rates when applied to the statewide indicated limited loss to payroll ratios from the September 1, 2025 classification relativity analysis.

The computation of the adjustment factors for each of the NAICS Sector groupings is analogous to that described above on a statewide, all classifications combined basis, with the following exceptions:

- The estimated first report level ratios of indemnity and medical losses per \$100 of payroll for policies incepting between September 1, 2021 and August 31, 2022 and policies incepting between September 1, 2022 and August 31, 2023 for each NAICS Sector grouping are developed to third and second report levels, respectively, based on the latest policy year incurred development factor derived from unit statistical data for that NAICS Sector grouping.
- The estimated first report level ratios of indemnity and medical losses per \$100 of payroll for policies incepting between September 1, 2023 and August 31, 2024 for each NAICS Sector grouping are computed by adjusting the first report level ratios of indemnity and medical loss to payroll for policies incepting between September 1, 2022 and August 31, 2023 for that NAICS Sector grouping by the change in the first report level ratios of indemnity and medical loss to payroll for that NAICS Sector grouping from the latest available unit statistical data,¹¹ with individual claims limited to \$500,000.

⁷ The trend factors used are based on changes in accident year indemnity and medical loss ratios reflected in Item AC24-12-01 of the December 10, 2024 WCIRB Actuarial Committee Agenda, converted to a September 1 to August 31 policy period using a standard actuarial parallelogram approach to convert accident year experience to policy periods.

⁸ For development from 18 to 21 months, accident year 2023 development is used. For development from 21 to 30 months, accident year 2022 development is used. See Exhibits 9.1 and 9.2 of Item AC24-12-01 of the December 10, 2024 WCIRB Actuarial Committee Agenda for the development factors used.

⁹ See Exhibits 3.1 and 3.2 of Item AC24-12-01 of the December 10, 2024 WCIRB Actuarial Committee Agenda.

¹⁰ This factor is based on utilizing the latest available unit statistical data and de-trending the \$175,000 and \$250 loss limits from the average level underlying the data used to compute September 1, 2025 to August 31, 2026 experience modifications to the average level of the latest available unit statistical data.

¹¹ Policies incepting between April 1, 2021 and March 31, 2022 compared to policies incepting between April 1, 2023 and March 31, 2024.

- In total, the average statewide expected loss rate determined by separate adjustments by NAICS Sector grouping should be equal to that based on the statewide, all classification data. The indemnity and medical expected loss rate factors computed at the NAICS Sector grouping level are adjusted to balance to the statewide, all classifications combined expected loss rate factors.
- The change in a classification's expected loss rate relativity to the statewide average expected loss rate from the prior year's expected loss rate relativity is limited to 15%. A factor is applied to each NAICS Sector grouping's adjustment factor to reflect the cost of redistributing the impact of the capped classifications' net expected losses above (or below) the 15% limitation among the remaining uncapped classifications.

The factors by NAICS Sector grouping, computed as described above, are applied to the indicated limited loss to payroll ratios for indemnity and medical that are computed in the September 1, 2025 classification relativity analysis. Each indemnity and medical loss to payroll ratio is adjusted by the appropriate factor based on the NAICS Sector grouping to which that classification is assigned. The adjusted indemnity and medical ratios for each classification are then added together to generate the expected loss rate for that classification proposed to be effective September 1, 2025 with each classification's expected loss rate change in relativity limited to a 15% change from the classification's relativity underlying the September 1, 2024 expected loss rates.

Effective September 1, 2022, annual payroll limitations are applied to employees in seven additional classifications, including 8601, *Engineers/Oil or Gas Geologists or Scouts/Forest Engineers*; 8741, *Real Estate Agencies*; 8749, *Mortgage Bankers*; 8801, *Credit Unions*; 8808, *Banks*; 8822, *Insurance Companies*; and 8874, *Instrument Mfg. – electronic/Computer or Computer Peripheral Equipment Mfg./Telecommunications Equipment Mfg./Audio/Video Electronic Products Mfg./Integrated Circuit and Semiconductor Wafer Mfg.* Effective September 1, 2024, annual payroll limitations are applied to employees in six additional classifications, including 4297, *Electronic Pre-press/Graphic Design*; 4512, *Biomedical Research Laboratories*; 8807, *Newspaper, Magazine or Book Publishing*; 8834, *Physicians' Practices and Outpatient Clinics*; 8839, *Dental or Orthodontia Practices*; and 9043, *Hospitals*. In order to appropriately reflect the payroll limitation in the expected loss rates for these classifications for which the experience period includes payroll experience from policies in which the maximum payroll limitations do not apply, the expected loss rates for these classifications are adjusted to reflect the payrolls that will not be limited in the experience rating computation. The factors used to adjust the expected loss rates for these classifications are consistent with those used to adjust the classification relativities. The factor estimated for each classification's expected loss rate are shown in Table 1.

Table 1 – Adjustments for Payroll Limitations to Expected Loss Rates

Classification	Effective Date	Full Adjustment	Proportion of Limited Payroll in Experience Period¹²	Factor to Apply to Expected Loss Rate¹³
8601	9/1/2022	14%	66.7%	0.95
8741	9/1/2022	30%	66.7%	0.90
8749	9/1/2022	27%	66.7%	0.91
8801	9/1/2022	22%	66.7%	0.93
8808	9/1/2022	22%	66.7%	0.93
8822	9/1/2022	19%	66.7%	0.94
8874	9/1/2022	20%	66.7%	0.93
4297	9/1/2024	13%	0.0%	0.87
4512	9/1/2024	18%	0.0%	0.82
8807	9/1/2024	20%	0.0%	0.80
8834	9/1/2024	35%	0.0%	0.65
8839	9/1/2024	18%	0.0%	0.82
9043	9/1/2024	17%	0.0%	0.83

D-Ratios

A classification's D-ratio represents the proportion of the expected losses in the classification that is estimated to be primary. In prior regulatory filings, the classification D-ratios were computed based on credibility weighting (based on the latest available unit statistical data) primary losses for the individual classification with that of the classification's retro hazard group (RHG). In 2024, staff reviewed this approach and found that using the individual classification losses does not significantly enhance the accuracy of the experience rating computation, particularly considering the additional complexity of this approach. At the December 10, 2024 meeting, the Actuarial Committee adopted a refined approach that bases the D-ratio solely on the RHG experience.¹⁴ As a result, the D-ratio for each classification and each primary threshold included in the Experience Rating Plan is calculated based on the proportion of the claim costs for the classification's RHG, which is primary. The data used is based on WCIRB unit statistical data for the most recent three years available (policies incepting between December 1, 2019 and November 30, 2022), adjusted to the experience period cost level underlying policies incepting between September 1, 2025 and August 31, 2026 (generally policies incepting between September 1, 2021 and August 31, 2022 at third unit statistical report level, policies incepting between September 1, 2022 and August 31, 2023 at second unit statistical report level, and policies incepting between September 1, 2023 and August 31, 2024 at first unit statistical report level).¹⁵

¹² For classifications with maximum payroll limitations effective September 1, 2022, the payroll limitations apply to 24 out of 36 months of the experience period. For classifications with maximum payroll limitations effective September 1, 2024, the payroll limitations do not apply to any of the experience period.

¹³ Equal to $1.0 - [\text{Full Adjustment}] * (1.0 - [\text{Proportion of Limited Payroll in Experience Period}])$. These factors will bring the loss to payroll ratios underlying the classification relativities, which are on a fully payroll limited basis to the basis underlying the experience period for September 1, 2025 to August 31, 2026 experience modifications.

¹⁴ See Item AC24-09-03 of the September 17, 2024 and December 10, 2024 WCIRB Actuarial Committee Agendas.

¹⁵ Beginning with the January 1, 2019 Experience Rating Plan, the first \$250 of each claim is eliminated from the experience rating calculation. In deriving the D-ratio for each classification, the first \$250 of each claim is eliminated from both the expected losses and the primary component of expected losses.