

WCIRB Actuarial Committee Meeting

February 12, 2025

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1. AC21-12-07: Indemnity Claim Frequency Model
2. AC25-02-01: 9/1/2025 Regulatory Filing – Experience Rating Plan Values

01

Indemnity Claim Frequency Model



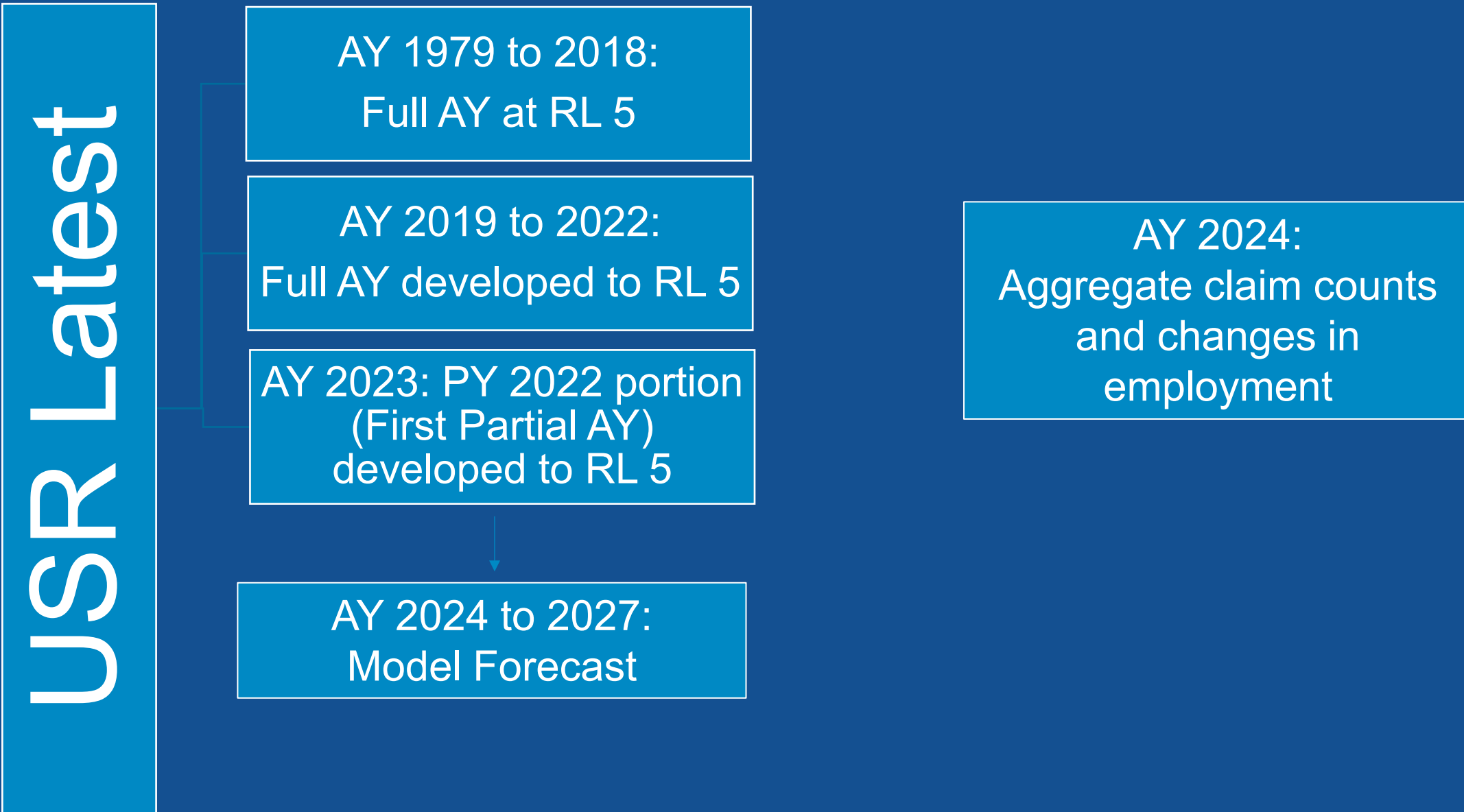
Background

- In the 2021 review of the Indemnity Claim Frequency Model, the following were recommended:
 - Incorporating a forecast of the cumulative injury index (CII) using a time series model
 - 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
 - These were generally reflected in the model for the September 1, 2024 Pure Premium Rate Filing
- Impact of COVID-19 and the Resulting Economic Downturn
 - Historically, increases in the frequency of cumulative injury claims have been strongly correlated with increases in the frequency of non-cumulative injury claims
 - In recent accident years (AY), changes in the frequency of non-cumulative and cumulative injury claims have diverged significantly
 - Because of these changes as well as very large swings in the economic variables which significantly reduced the model fit, AYs 2020, 2021, and 2022 were excluded from the model for the September 1, 2024 Pure Premium Rate Filing

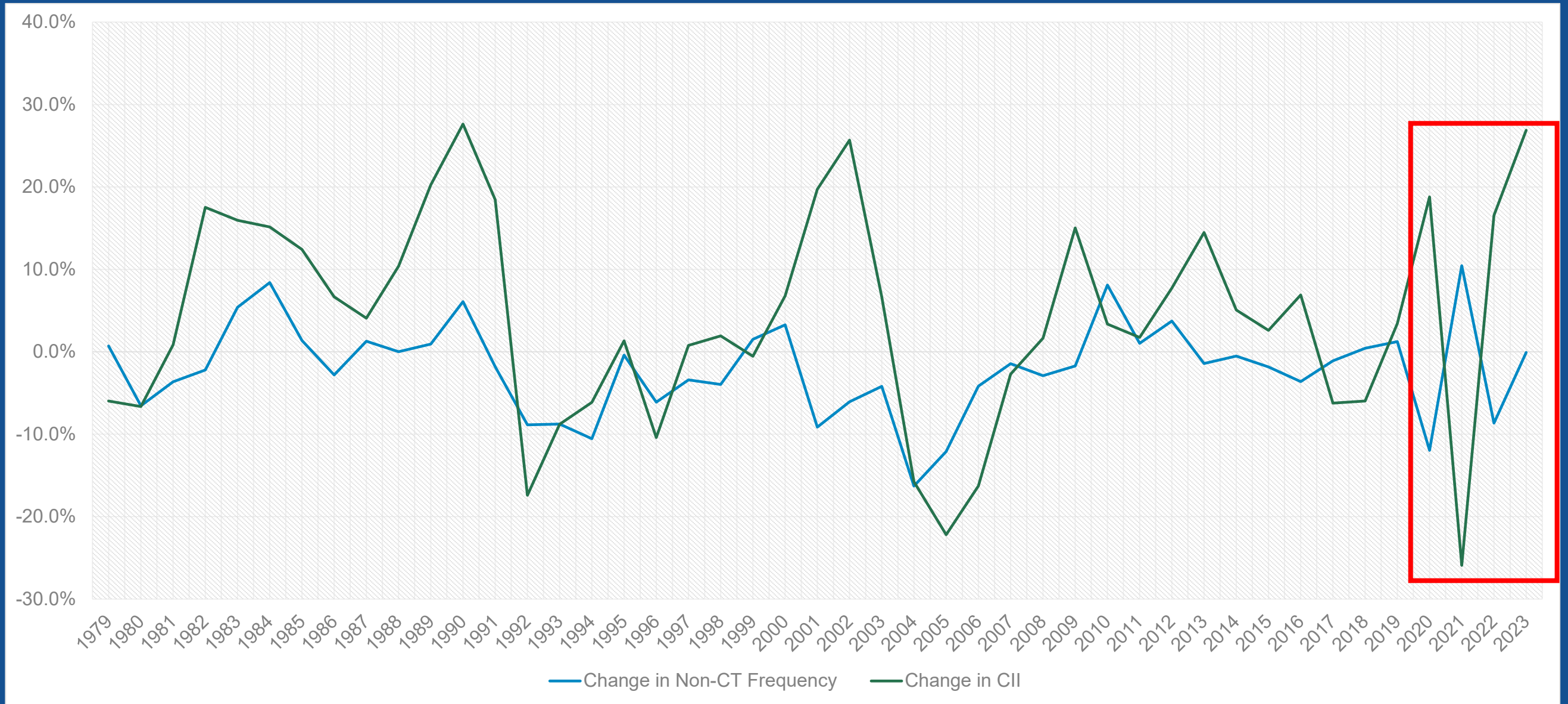
Impact of PY 2022 Data in the Indemnity Claim Frequency Model

- For the fourth accident year in a row, the difference between the change in frequency for cumulative injuries and non-cumulative injuries is among the highest we have seen in 45 years of experience with the model
- Payroll limitations effective on 9/1/22 for 7 additional classifications have a larger impact on AY 2023 than AY 2022
 - Based on 2023 study, no special adjustment is applied to those classes
 - The hazardous adjustment accounts for most of the impact
- Widespread increase in counts of cumulative claims
 - Experienced across multiple industries with the largest increase in counts from hospitality and manufacturing
 - Very different rates of increase by Accident Quarter (AQ) within the partial year of data for AY 2023
- Based on this, we have the following questions for the September 1, 2025 Pure Premium Rate Filing
 - Is the CII still predictive of the non-cumulative indemnity claim frequency change?
 - Is the current approach for estimating the change in frequency for the latest accident year appropriate?

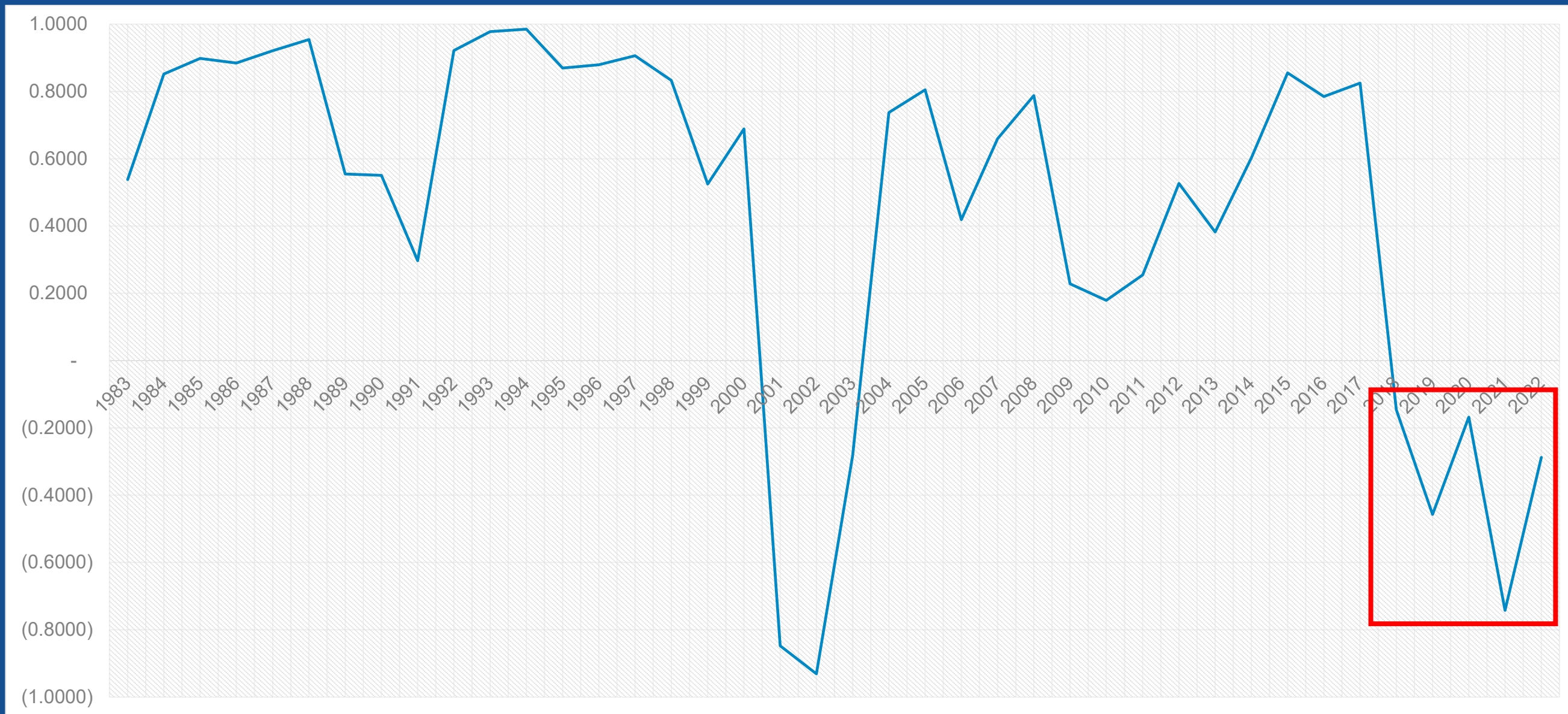
Data available for September 1, 2025 Pure Premium Rate Filing



Change in Frequency of Non-Cumulative Injuries vs Change in CII

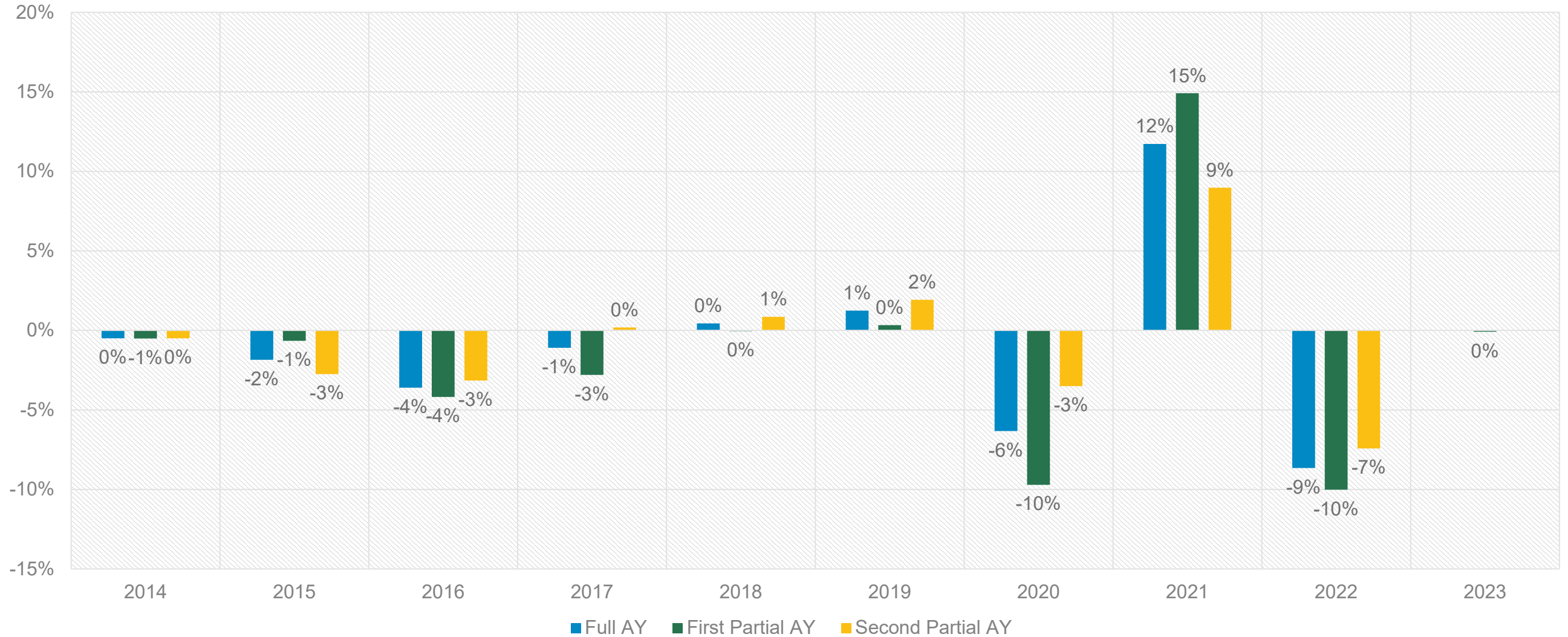


Correlation of the Change in Counts of Cumulative and Non-Cumulative Injuries (Rolling 5-year Averages)



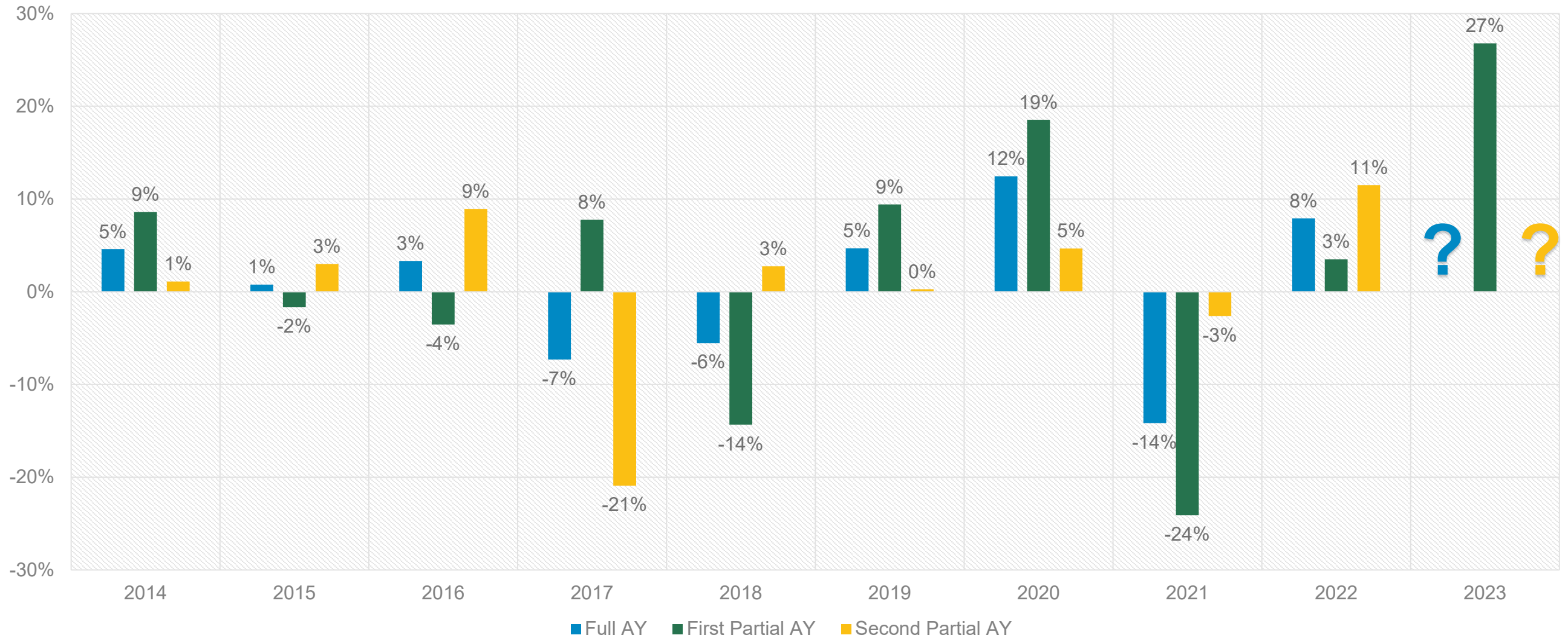
Change in Frequency of Non-Cumulative Injuries

Non-Cumulative Frequency Change

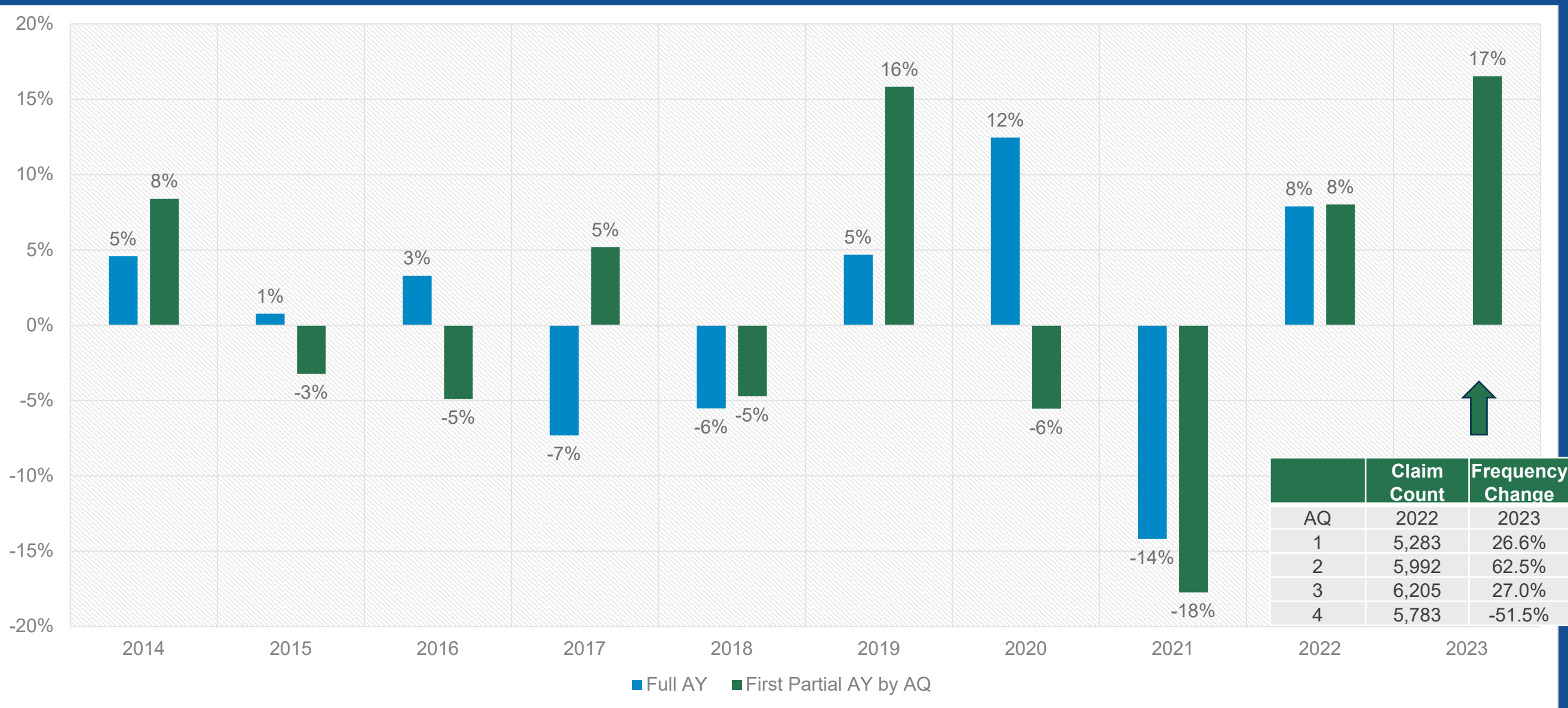


Change in the Frequency of Cumulative Injuries

Cumulative Claim Frequency Change



Comparison of Estimated Annual Frequency Change based on Partial Year or Accident Quarter (AQ) Changes – Cumulative Injuries



Absolute Error and Mean Squared Error (MSE) for Alternative Estimates – Non-Cumulative Injuries

$$\text{Absolute Error} = |\text{Actual Frequency Change} - \text{Estimated Frequency Change}|$$

AY	First Partial AY	First Partial AY by AQ
2014	0.0%	1.9%
2015	1.2%	0.1%
2016	0.6%	1.1%
2017	1.7%	1.0%
2018	0.5%	0.5%
2019	0.9%	4.4%
2020	3.4%	12.6%
2021	3.2%	3.0%
2022	1.4%	1.2%
Average	1.42%	2.87%
MSE	0.3%	1.9%

Absolute Error and Mean Squared Error (MSE) for Alternative Estimates – Cumulative Injuries

$$\text{Absolute Error} = |\text{Actual Frequency Change} - \text{Estimated Frequency Change}|$$

AY	First Partial AY	First Partial AY by AQ
2014	4.0%	3.8%
2015	2.4%	4.0%
2016	6.8%	8.2%
2017	15.1%	12.5%
2018	8.8%	0.8%
2019	4.7%	11.1%
2020	6.1%	18.0%
2021	9.9%	3.6%
2022	4.4%	0.1%
Average	6.93%	6.90%
MSE	5.5%	7.1%

Performance of Frequency Model Projections using Alternative Assumptions for the CII

$$\text{Absolute Error \%} = \frac{|\text{Actual Frequency Change} - \text{Frequency Change (Assumption}_i\text{)}|}{\text{Actual Frequency Change}}$$

Cumulative Claim Frequency Change: Absolute Error %

Latest AY	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 Claim Frequency Change: Absolute Error %

Latest AY	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%

Performance of Frequency Model Projections using Alternative Assumptions for the CII

Total Claim Frequency Change: Absolute Error %

Latest AY	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	3.0%	3.2%	3.1%									
2020	5.1%	2.3%	0.1%	2.4%	0.3%	3.1%						
2021	10.2%	9.4%	14.9%	7.5%	6.8%	12.1%	5.2%	9.7%	14.7%			
2022	1.0%	3.1%	1.9%	2.1%	0.1%	1.5%	4.6%	3.2%	1.5%	10.4%	11.3%	15.4%

Current Findings and Decisions for the March AC Meeting

Findings

- Current projected increase in the frequency of cumulative injuries for AY 2023 may be overstated but is expected to be a significant increase while the change in the frequency of non-cumulative injuries is relatively flat
- None of the existing alternatives to project indemnity claim frequency have consistently outperformed the others for the past few accident years

Decisions

- What is our best estimate of the AY 2023 change in the frequency of cumulative injuries?
- Should we include the CII in the fit of the model?
- If so, how should we forecast the CII?
- Is there anything else we should investigate prior to the March AC meeting?

02

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



Computation of Indicated Off-balance Factor

- Based on the average unadjusted ratio of actual losses to expected losses for experience rated employers
- Adjustments to A / E ratios:
 - Off-balance factor in effect for that year (applied to that year's expected loss rates)
 - Adjustment to reflect section 11751.9 rerates
 - Hindsight correction factor to produce average expected loss rate
- Projected A / E ratio and average credibility used to determine change from current off-balance factor
 - Selected A / E ratio based on weighted average over three periods
 - Latest PY (9/1/2024 to 8/31/2025) is partial and given 50% weight, other two PY given full weight
 - Selected average credibility based on 2023 (latest full annual period)

Indicated Off-balance Factor



Computation of Statewide Expected Loss Rate Factors

- Based on average indicated limited loss to payroll ratios from classification relativity analysis
- Adjustments to targeted expected loss rate level:
 - Years and maturity level used in experience mods (1st, 2nd, and 3rd report levels)
 - Selected experience rating off-balance
 - Factor to reflect loss limitations (first \$250 and \$175,000 maximum)
 - Adjustment for Section 11751.9 rerates
- Methodology currently undertaking a multi-year review

Treatment of COVID-19 Claims in Expected Loss Rates

- COVID-19 claims occurring 9/1/2024 and later are included in the computation of experience modifications
- Experience period for 9/1/2025 to 8/31/2026 modifications generally consist of:
 - 9/1/2021 to 8/31/2022 policies – COVID-19 claims not included
 - 9/1/2022 to 8/31/2023 policies – COVID-19 claims not included
 - 9/1/2023 to 8/31/2024 policies – COVID-19 claims included for approximately **50%** of the period
- Staff reviewed COVID-19 cost percentages in aggregate financial data for 2023 and 2024

Accident Year	COVID-19 % of Incurred Indemnity	COVID-19 % of Incurred Medical
2023 (21 months)	0.18%	0.06%
2024 (9 months)	0.08%	0.03%
Average	0.13%	0.05%
Factor (50%)	1.0006	1.0002

- Recommendation: Apply the selected factors to the loss to payroll ratios for 9/1/2023 to 8/31/2024 policies in the ELR factor computation (small impact).

Computation of Individual NAICS Sector Expected Loss Rate Factors

- Computation very similar to statewide factors, with a few differences
- Loss development and trend factors are based on individual NAICS Sector unit statistical data rather than aggregate financial data
 - In rare cases, individual NAICS Sector data is replaced with a broader group of data to reduce volatility
- Each NAICS Sector's expected loss rate factors are balanced to the average of the statewide factors
- Each individual classification's expected loss rate is limited to a 15% relativity change from its prior expected loss rate
- COVID-19 claims included in the experience period handled through balancing to the statewide ELR factors

Number of Class with ELR capped by 15% Swing Limitation

Filing Date	Number of ELRs Limited at -15%	Number of ELRs Limited at +15%	% of Total Expected Losses Redistributed
1/1/2021	26	52	0.6%
9/1/2021	33	34	0.1%
9/1/2022	60	55	1.2%
9/1/2023	33	44	0.3%
9/1/2024	35	41	0.3%
9/1/2025 (Preliminary)	38	73	0.7%

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1901 Harrison Street, 17th Floor
Oakland, CA 94612
888.CA.WCIRB (888.229.2472)