

WCIRB Actuarial Committee Meeting

February 13, 2024

ANTITRUST NOTICE

As members of the Workers' Compensation Insurance Rating Bureau of California (WCIRB) and their agents, you are bound, when involved in meetings, presentations, webinars or other activities of the WCIRB, to limit your actions (as well as discussions and virtual chats, other than social ones) to matters relating to the business of the WCIRB. Matters that do not relate directly to WCIRB business should be avoided. Members and their agents should particularly avoid discussions, chats or conduct that could be construed as intended to affect competition (or access to markets). Thus, as members and their agents, you should not discuss or pursue the business interests of individual insurers or others, including, in particular, the plans of individual members involving, or the possibility or desirability of (a) raising, lowering, or stabilizing prices (premiums or commissions); (b) doing business or refusing to do business with particular, or classes of, insurers, reinsurers, agents, brokers, or insureds, or in particular locales; or (c) potential actions that would affect the availability of products or service either generally or in specific markets or locales.

NOTICE & COPYRIGHT

This presentation was developed by the Workers' Compensation Insurance Rating Bureau of California (WCIRB) for informational purposes only. The WCIRB shall not be liable for any damages of any kind, whether direct, indirect, incidental, punitive or consequential, arising from the use, inability to use, or reliance upon information provided in this presentation.

© 2024 Workers' Compensation Insurance Rating Bureau of California. All rights reserved.

No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including, without limitation, photocopying and recording, or by any information storage or retrieval system without the prior written permission of the Workers' Compensation Insurance Rating Bureau of California (WCIRB), unless such copying is expressly permitted in this copyright notice or by federal copyright law. No copyright is claimed in the text of statutes and regulations quoted within this work.

Each WCIRB member company, including any registered third party entities, (Company) is authorized to reproduce any part of this work solely for the following purposes in connection with the transaction of workers' compensation insurance: (1) as necessary in connection with Company's required filings with the California Department of Insurance; (2) to incorporate portions of this work, as necessary, into Company manuals distributed at no charge only to Company employees; and (3) to the extent reasonably necessary for the training of Company personnel. Each Company and all agents and brokers licensed to transact workers' compensation insurance in the state of California are authorized to physically reproduce any part of this work for issuance to a prospective or current policyholder upon request at no charge solely for the purpose of transacting workers' compensation insurance and for no other purpose. This reproduction right does not include the right to make any part of this work available on any website or any form of social media.

Workers' Compensation Insurance Rating Bureau of California, WCIRB, WCIRB California, WCIRB Connect, WCIRB Inquiry, WCIRB CompEssentials, X-Mod Direct, eSCAD, Comprehensive Risk Summary, X-Mods and More, Annual Business Comparative and the WCIRB California logo (WCIRB Marks) are registered trademarks or service marks of the WCIRB. WCIRB Marks may not be displayed or used in any manner without the WCIRB's prior written permission. Any permitted copying of this work must maintain any and all trademarks and/or service marks on all copies.

To seek permission to use any of the WCIRB Marks or any copyrighted material, please contact the WCIRB at customerservice@wcirb.com.

Table of Contents/Agenda

1. AC23-02-02: Clerical Telecommuting Employees Classification
2. AC24-02-02: Review of Expected Loss Rate Projection Methodology
3. AC24-02-01: 9/1/2024 Regulatory Filing – Experience Rating Plan Values

01

Clerical Telecommuting Employees Classification



Background and Objective

■ Background

- Classification 8871, *Clerical Telecommuter Employees – N.O.C.*, became effective January 1, 2021
 - For clerical office employees who work more than 50% of their time at their home or other office space away from any employer location
- Committee recommended reviewing 8871 experience as soon as data becomes available to assess whether a differential in advisory pure premium rate (PPR) between Classifications 8810 and 8871 may be appropriate
- PPR for Classification 8871 was the same as that for Classification 8810 in 2021 and 2022
- Based on a review of initial 8871 experience as of January 2023, the Committee agreed to recommend establishing a different rate for Classification 8871 using a tempered approach consistent with the WCIRB's standard practice of limiting the relativity change to 25%
- As of September 1, 2023, the approved PPR for:
 - 8810: \$0.20
 - 8871: \$0.16

■ Objective

- Review available Classification 8871 experience to validate the differential in PPR between Classifications 8871 and 8810 in preparation for the September 1, 2024 Regulatory Filing.

Analysis of 8871 Experience

- Data source:
 - Unit Statistical Report (USR) data
 - All 2021 policies
 - 2022 policies reported as of January 15, 2024
 - WCIRB Indemnity Transaction data
 - COVID-19 claims are excluded except for statistics that explicitly include them

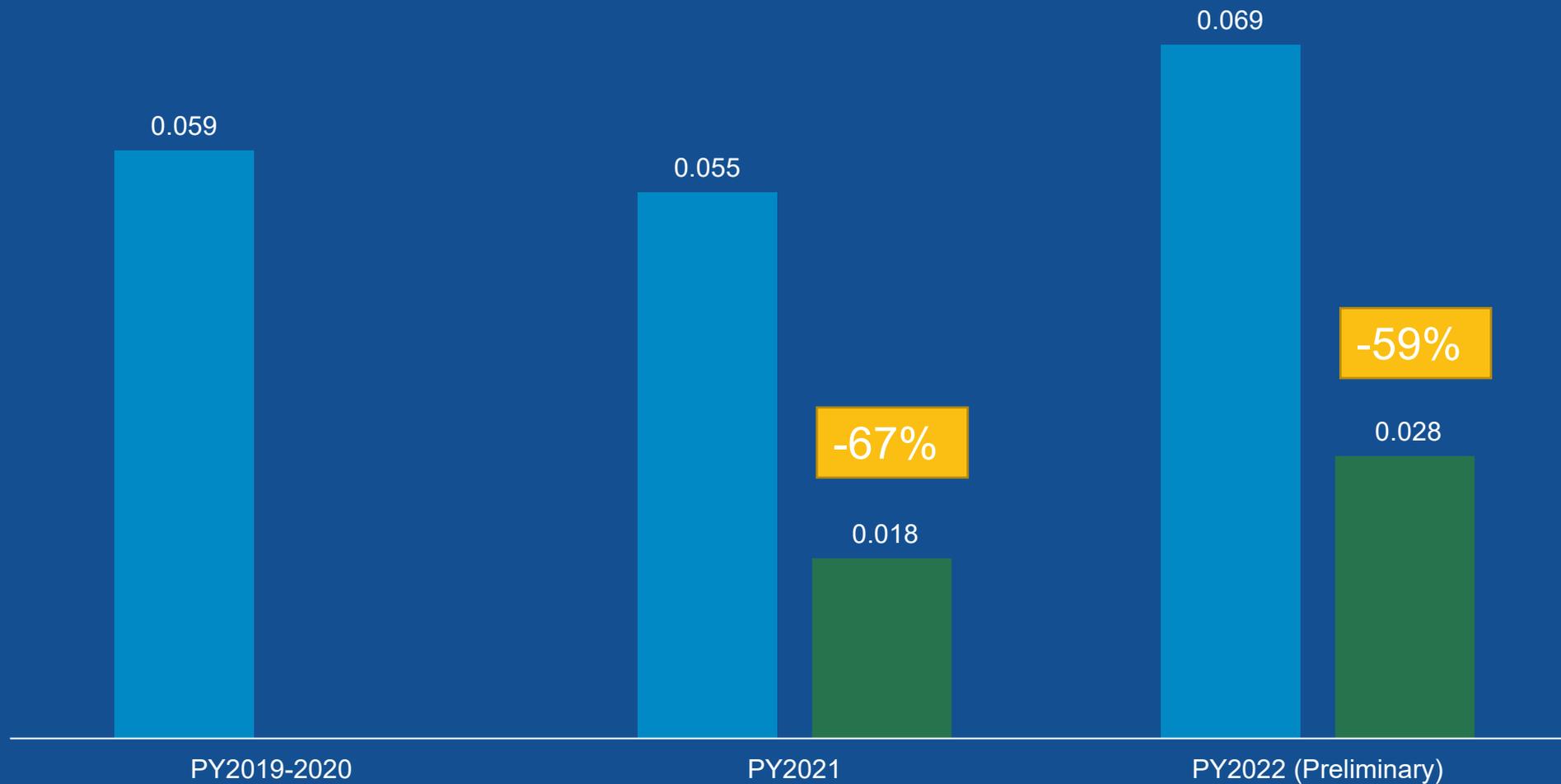
- Reported PY2022 experience:
 - Reflects the first few months of 2022 policy experience
 - 8810 payroll: \$95B reported (38% of PY2021 8810 experience)
 - 8871 payroll: \$9.4B reported (55% of PY2021 8871 experience)
 - 125 claims reported for 8871 (55% of PY2021 8871 claims)

Loss and Payroll Experience: 8871 vs. 8810

As of January 15, 2024

Capped Loss to Payroll Ratio at First Report Level (per \$100 of payroll)

■ 8810 ■ 8871



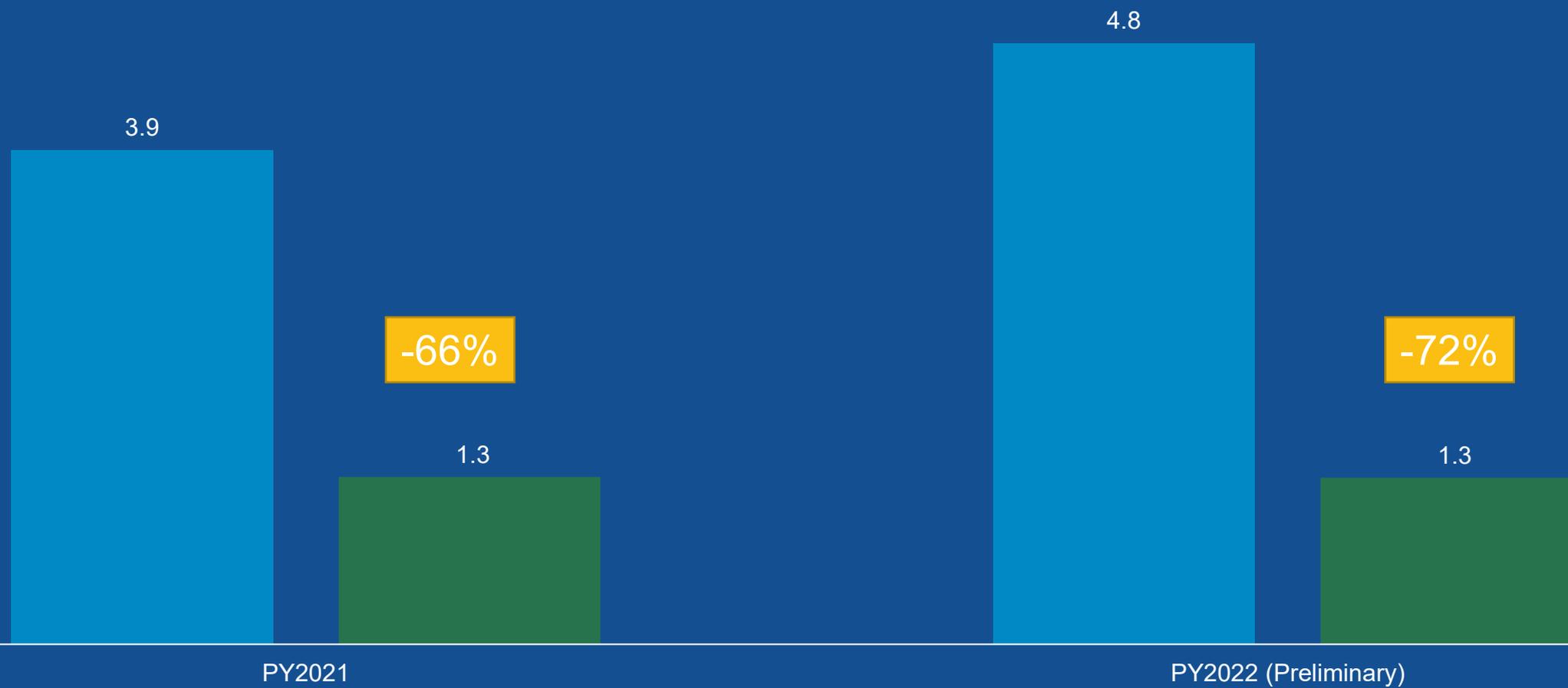
Classification	Loss to Payroll Ratio (PY2021-2022)
8810	0.059
8871	0.022
% difference	-63%

Claim Frequency: 8871 vs. 8810

As of January 15, 2024

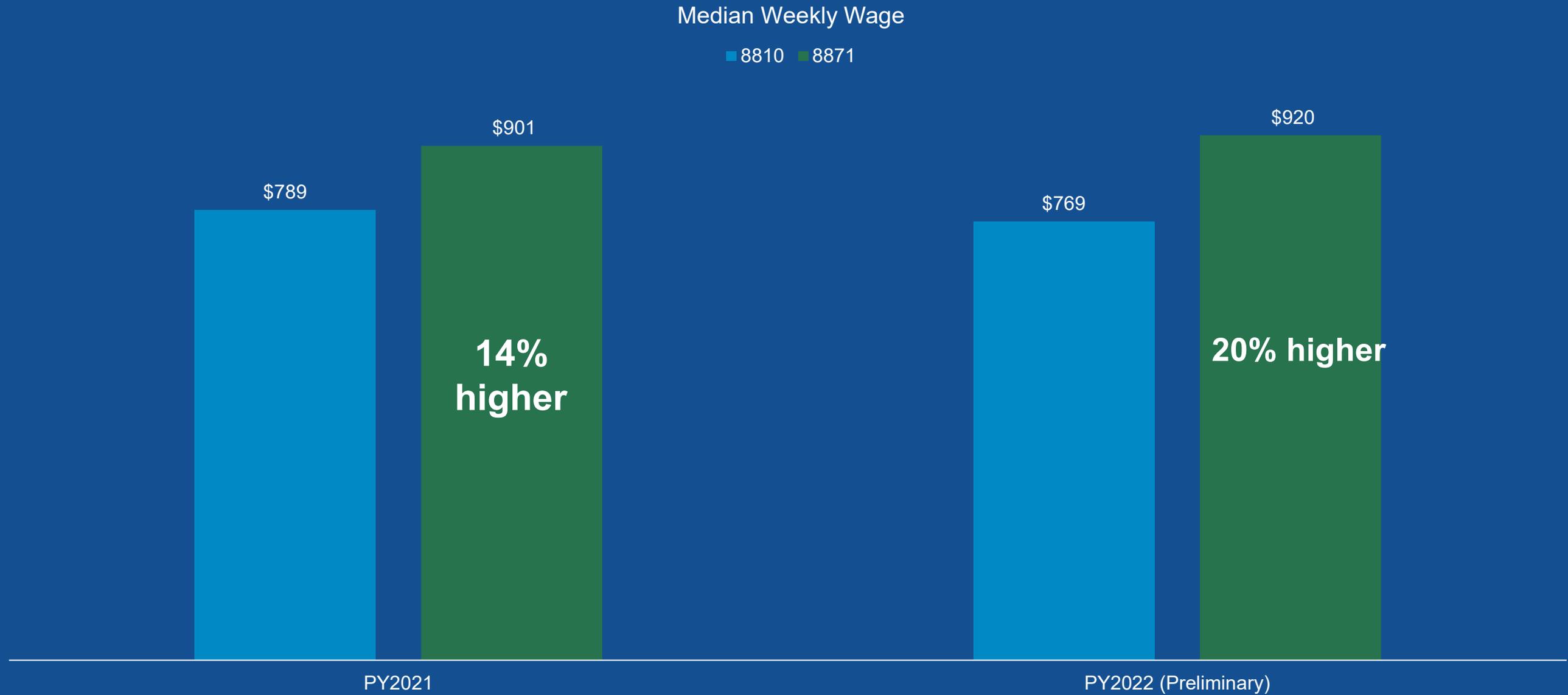
Claim Frequency per \$100M of Payroll

■ 8810 ■ 8871



Weekly Wage for Injured Workers: 8871 vs. 8810

As of January 15, 2024

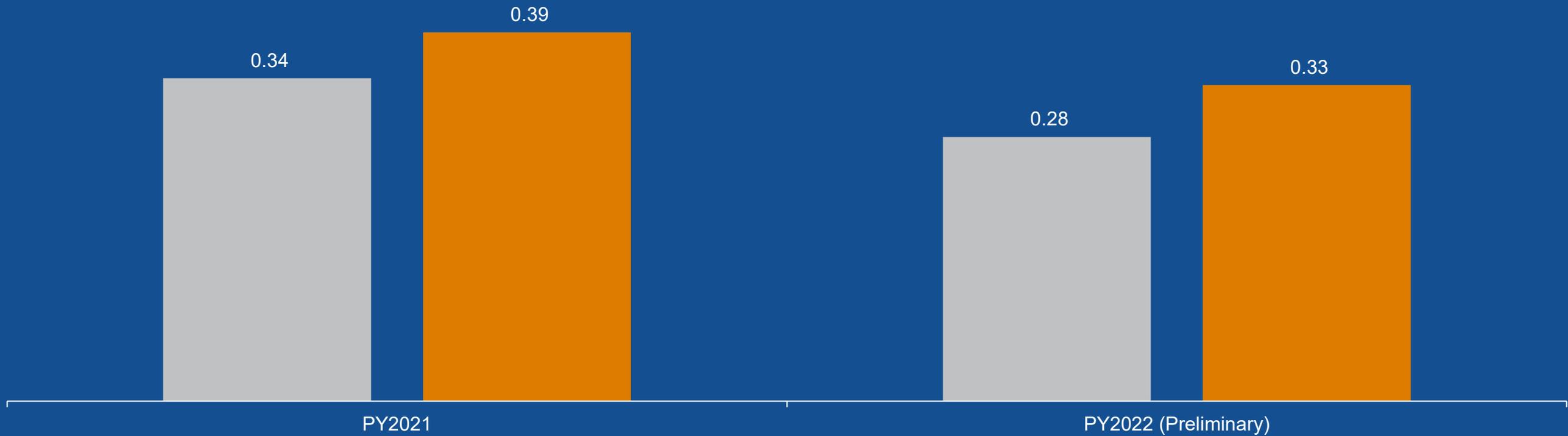


Estimated Differential in Claim Frequency: 8871 vs. 8810

As of January 15, 2024

8871 Claim Frequency Relative to 8810

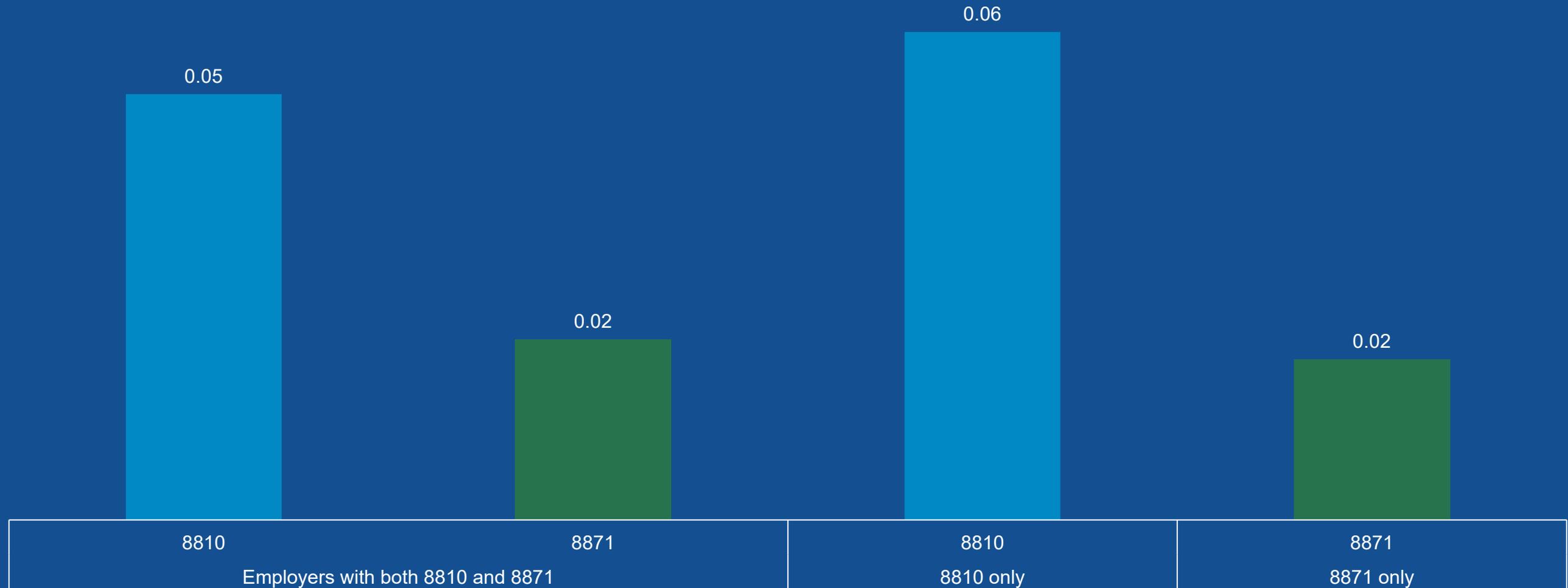
■ Before adjusting for wage differential ■ After adjusting for wage differential



Loss and Payroll Experience by Types of Employers

As of January 15, 2024

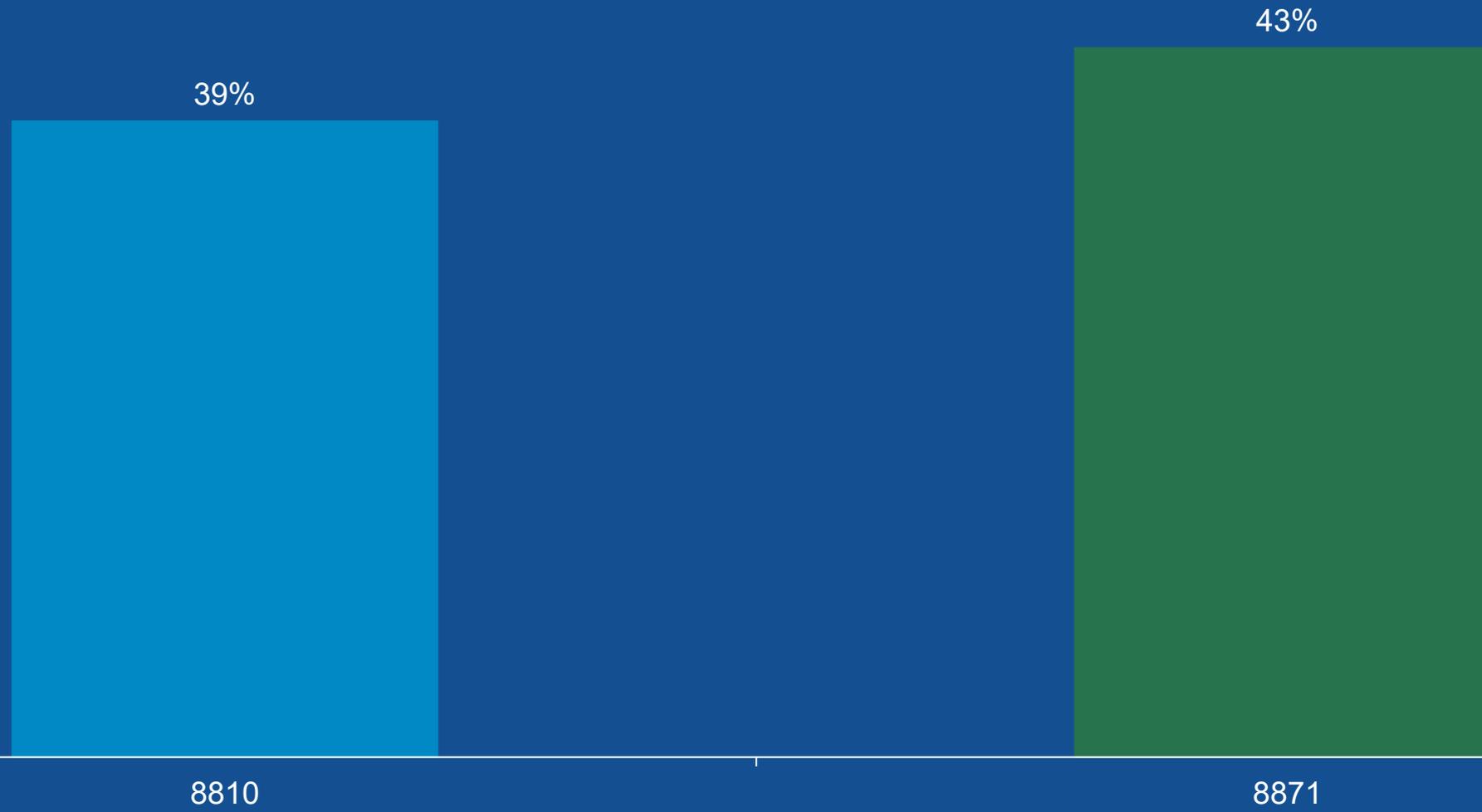
Capped Loss to Payroll Ratio (PYs 2021-2022)



Share of Indemnity Claims: 8871 vs. 8810

As of January 15, 2024

Share of Indemnity Claims (PYs 2021-2022)

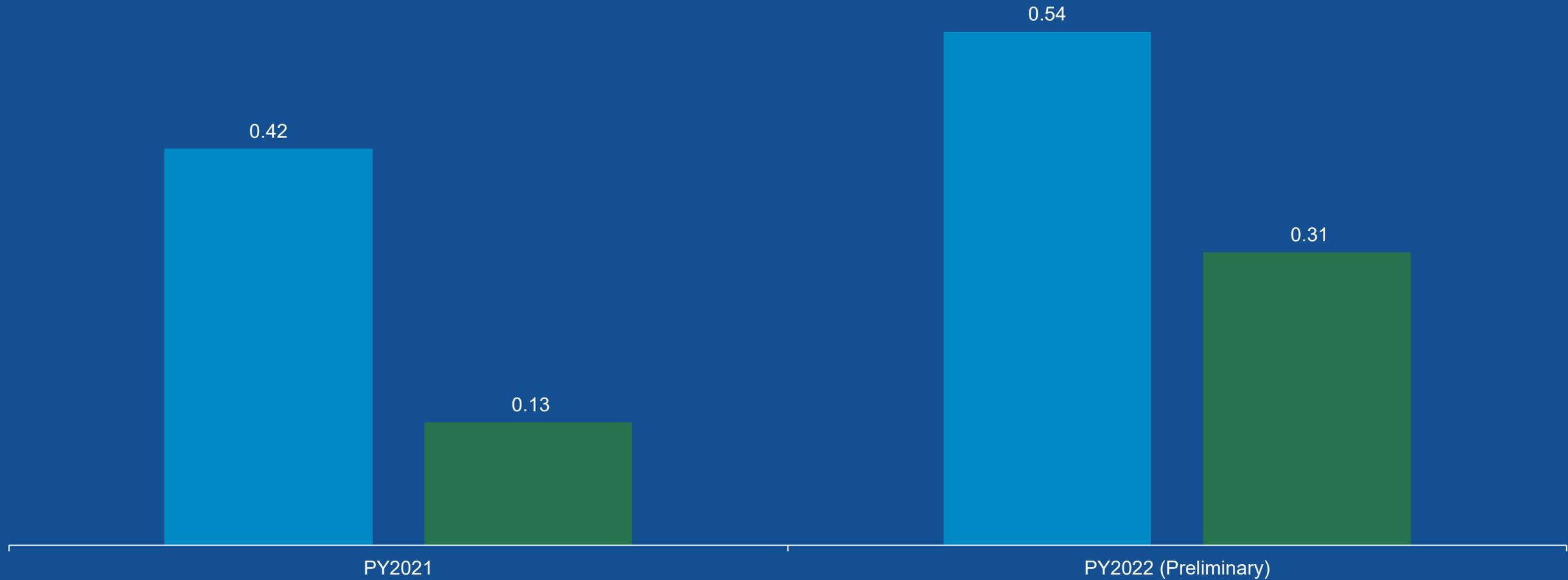


Indemnity Claim Frequency of Cumulative Trauma Claims: 8871 vs. 8810

As of January 15, 2024

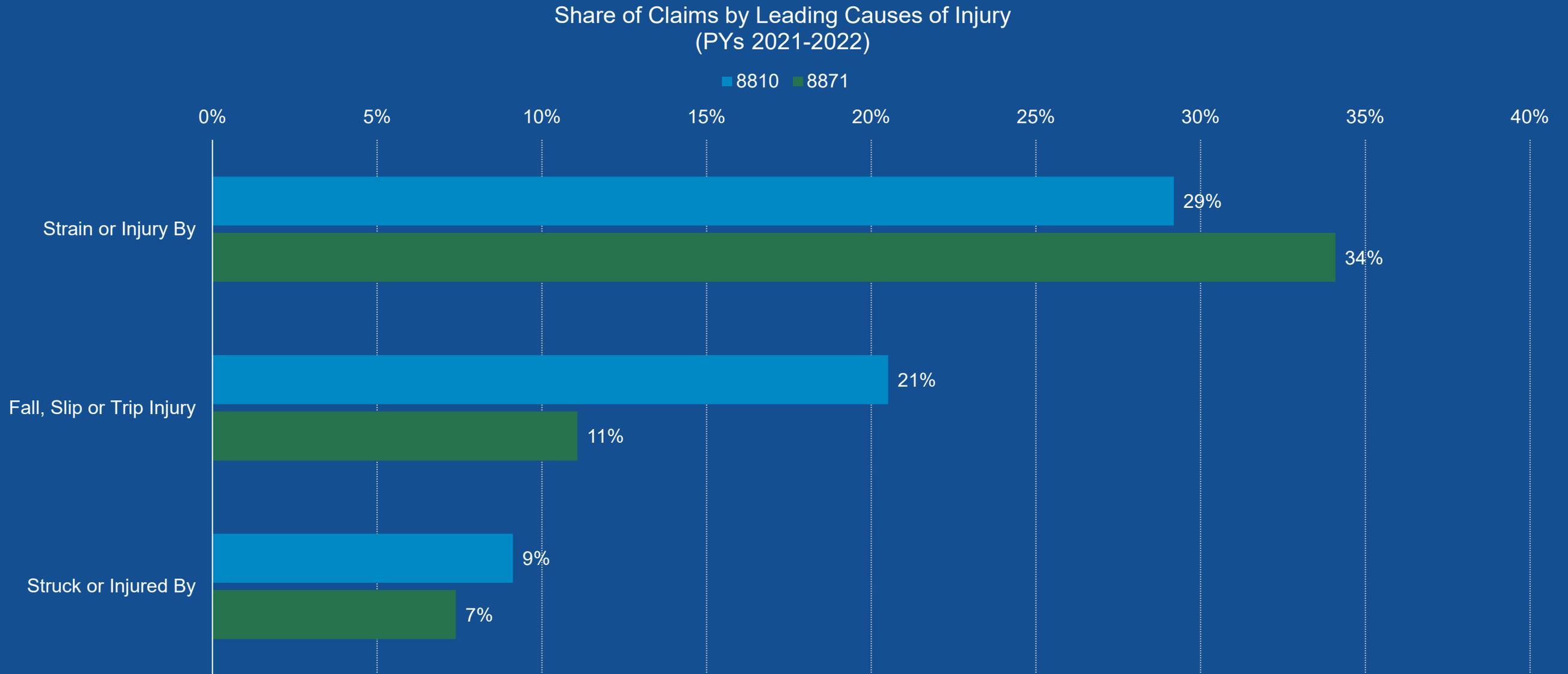
Indemnity Cumulative Trauma Claims per \$100M of Payroll

■ 8810 ■ 8871



Distribution of Leading Causes of Injury: 8871 vs. 8810

As of January 15, 2024

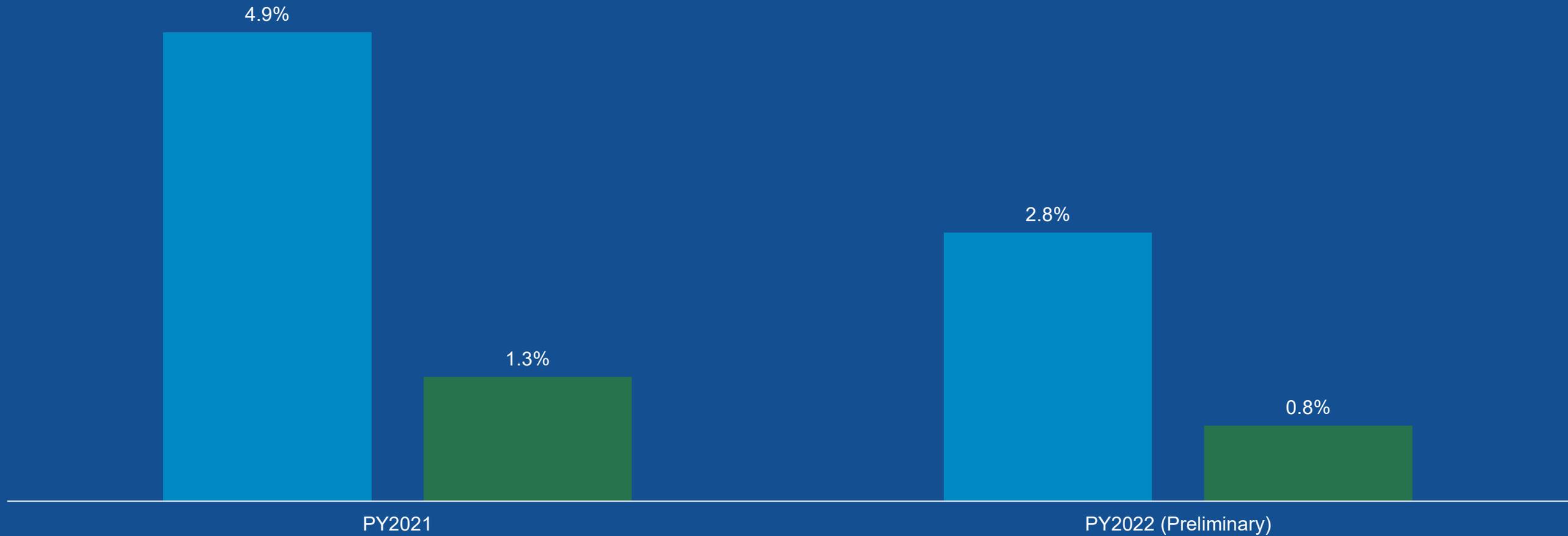


Share of COVID-19 Claims: 8871 vs. 8810

As of January 15, 2024

Share of COVID-19 Claims Relative to All Claims

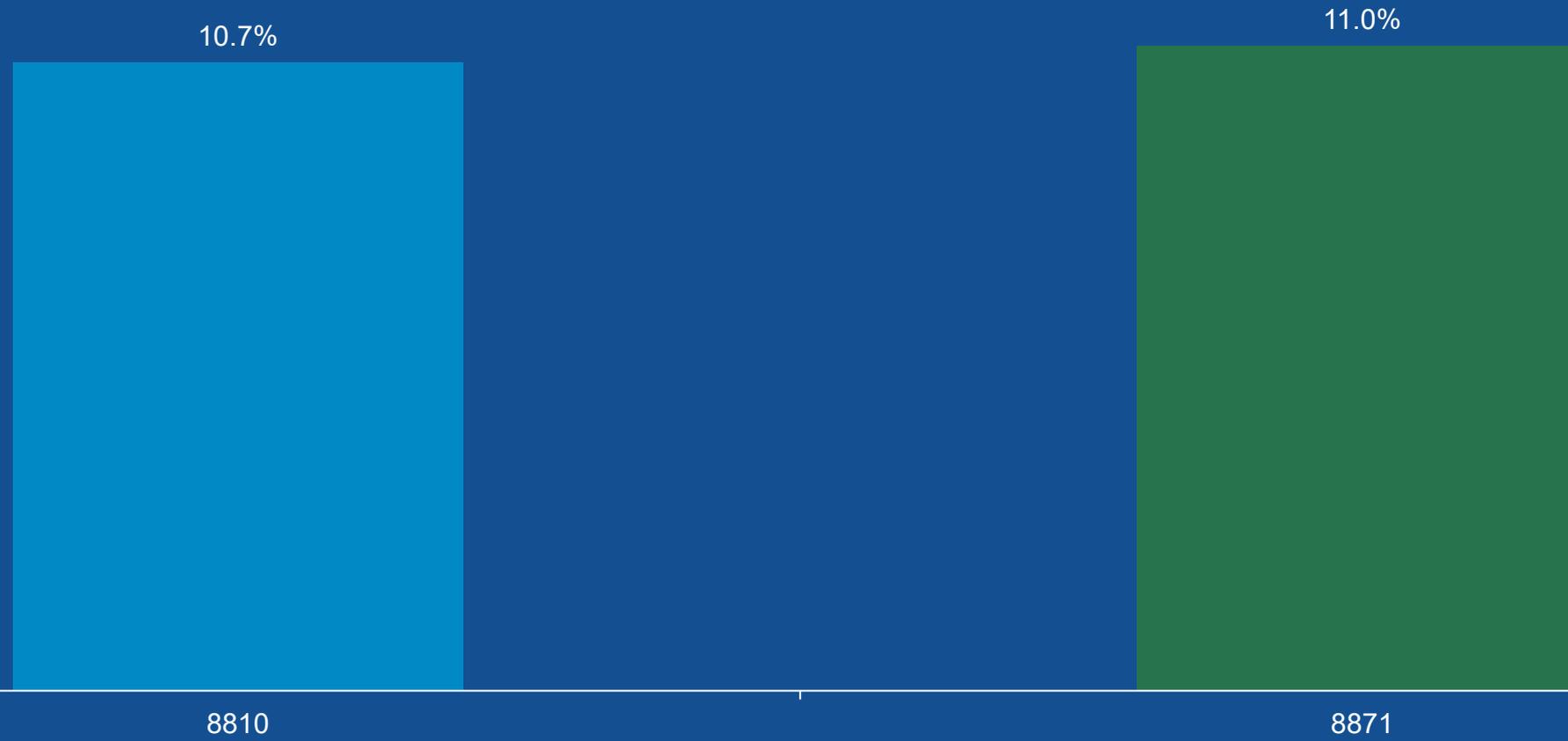
■ 8810 ■ 8871



Denial Rate: 8871 vs. 8810

As of January 15, 2024

Share of Denied Claims Relative to All Claims (PY2021-2022)



Summary of Preliminary Findings

- Based on reported 2021 and 2022 policy data, Classification 8871 has different loss and payroll experience from Classification 8810
 - 8871 has significantly lower loss to payroll ratio than 8810 by 63%, mostly driven by lower claim frequency
 - Key characteristics of 8871 claims compared to 8810 claims:
 - Higher median weekly wage among injured workers
 - Lower frequency of cumulative trauma claims
 - Similar share of indemnity claims
 - More strain injuries for Classification 8871, while more fall injuries for Classification 8810

- The reported 8871 loss and payroll experience thus far validates the differential in the advisory PPRs between Classifications 8871 and 8810
 - Indicated relativity change for 8871 using the WCIRB standard approach on the reported data would be a decrease of 28%

- Staff recommends continuing the tempered approach consistent with WCIRB's standard practice and limiting the relativity change of Classification 8871 to 25%

02

Review of Expected Loss Rate Projection Methodology



Expected Loss Rate Methodology History

Prior to 2008:

Single ELR factor for all classifications

2008 Study:

- Overall ELR estimation error reasonable in stable periods, not in transition periods
- Bias exists when using a single factor for some classifications
- Several groupings tested, NAICS groupings selected

Swing Limit:

Starting in 2013, the change in the classification's ELR relativity is limited to a 15% change up or down to mitigate the impact of large swings in the data on experience modifications. The net impact of these swing limits are spread across all classification ELRs.

Multi-Year ELR Methodology Review

- Primary goals:
 - Improve the accuracy and stability of the projected ELRs
 - Ensure the ELRs appropriately align with the pure premium rates
- First phase includes reviewing the appropriate groupings of classifications for the ELR factors
- Current process uses 18 NAICS Sector groupings
- In additional phases we plan to review the data timing, swing limit, special adjustments, etc.

Retrospective Analysis

Current approach compared hindsight Actual Loss Rate (ALR) against Expected Loss Rate (ELR) for policy years 2013 to 2022

Data limitations and assumptions:

- USR data is used to pull 464 classifications that had experience across all 10 years
- Currently assigned groupings were used for all years
- Data excludes COVID-19 experience

The following groupings are compared in the current ELR study:

- North American Industrial Classification System (NAICS) Sector (current approach)
- NAICS Sector with Loss Development Groups (ILDG and MLDG) for development
- Retrospective Rating Hazard Groups (RHGs)
- Clustering assigned grouping based on the ALR and ALR Factor (ALR / ILLPR)
- Kruskal-Wallis (KW) Bifurcation

ELR Retrospective Accuracy by NAICS Sector (Exh 1.1)

ELR Retrospective Accuracy Using Current (NAICS Sector) Method

NAICS	NAICS Description	Experience Period for Projection Year:									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
11 & 21	Agriculture & Mining	5.5%	16.1%	14.6%	13.2%	10.9%	16.4%	20.1%	18.1%	17.3%	3.1%
22 & 23	Utilities & Construction	11.4%	20.6%	15.2%	13.7%	18.0%	27.5%	26.2%	20.2%	16.2%	4.7%
31	Manufacturing	16.5%	18.5%	17.3%	18.5%	16.6%	25.9%	24.6%	21.3%	21.7%	9.0%
42	Wholesale	14.1%	20.4%	20.4%	17.5%	21.0%	21.4%	20.4%	19.3%	11.5%	7.3%
44	Retail	22.2%	17.7%	20.9%	18.3%	21.5%	21.7%	24.8%	17.1%	17.3%	11.0%
48	Transportation & Warehousing	11.0%	21.8%	13.7%	18.1%	20.7%	28.4%	19.8%	19.1%	15.0%	4.7%
51	Information	8.3%	18.0%	21.3%	11.7%	16.2%	14.5%	17.0%	8.6%	13.2%	8.2%
52	Finance & Insurance	19.9%	25.7%	29.0%	23.5%	23.8%	27.2%	10.4%	9.1%	36.9%	39.1%
53	Real Estate	6.7%	28.0%	23.3%	16.6%	17.2%	26.4%	18.0%	14.4%	22.7%	15.0%
54	Professional Services	20.8%	24.1%	23.6%	20.5%	17.7%	26.7%	25.7%	27.5%	29.8%	20.2%
56	Administrative	15.4%	20.1%	13.4%	21.5%	27.9%	20.6%	25.2%	18.0%	22.2%	11.6%
61	Education	5.7%	21.8%	18.6%	18.7%	17.7%	16.9%	15.1%	19.6%	23.6%	12.6%
62	Health	17.2%	17.2%	19.3%	22.1%	19.1%	22.7%	22.8%	18.1%	23.9%	8.2%
71	Arts & Entertainment	11.4%	13.1%	24.9%	23.3%	18.9%	16.4%	27.5%	21.3%	21.7%	-0.5%
72	Hospitality	13.4%	16.8%	21.0%	24.0%	22.2%	25.4%	26.6%	16.8%	15.2%	8.6%
81	Other	9.7%	16.2%	21.3%	22.7%	19.6%	22.2%	21.1%	10.9%	15.6%	11.8%
8742	Outside Sales	11.4%	21.8%	12.0%	19.9%	12.0%	26.4%	18.9%	23.1%	26.9%	16.3%
92 & 8810	Clerical & Public Admin	16.0%	14.4%	24.1%	25.6%	22.1%	27.1%	22.5%	15.0%	34.6%	31.8%
Total		15.4%	19.5%	18.9%	19.3%	19.4%	23.3%	24.2%	19.8%	20.8%	10.5%

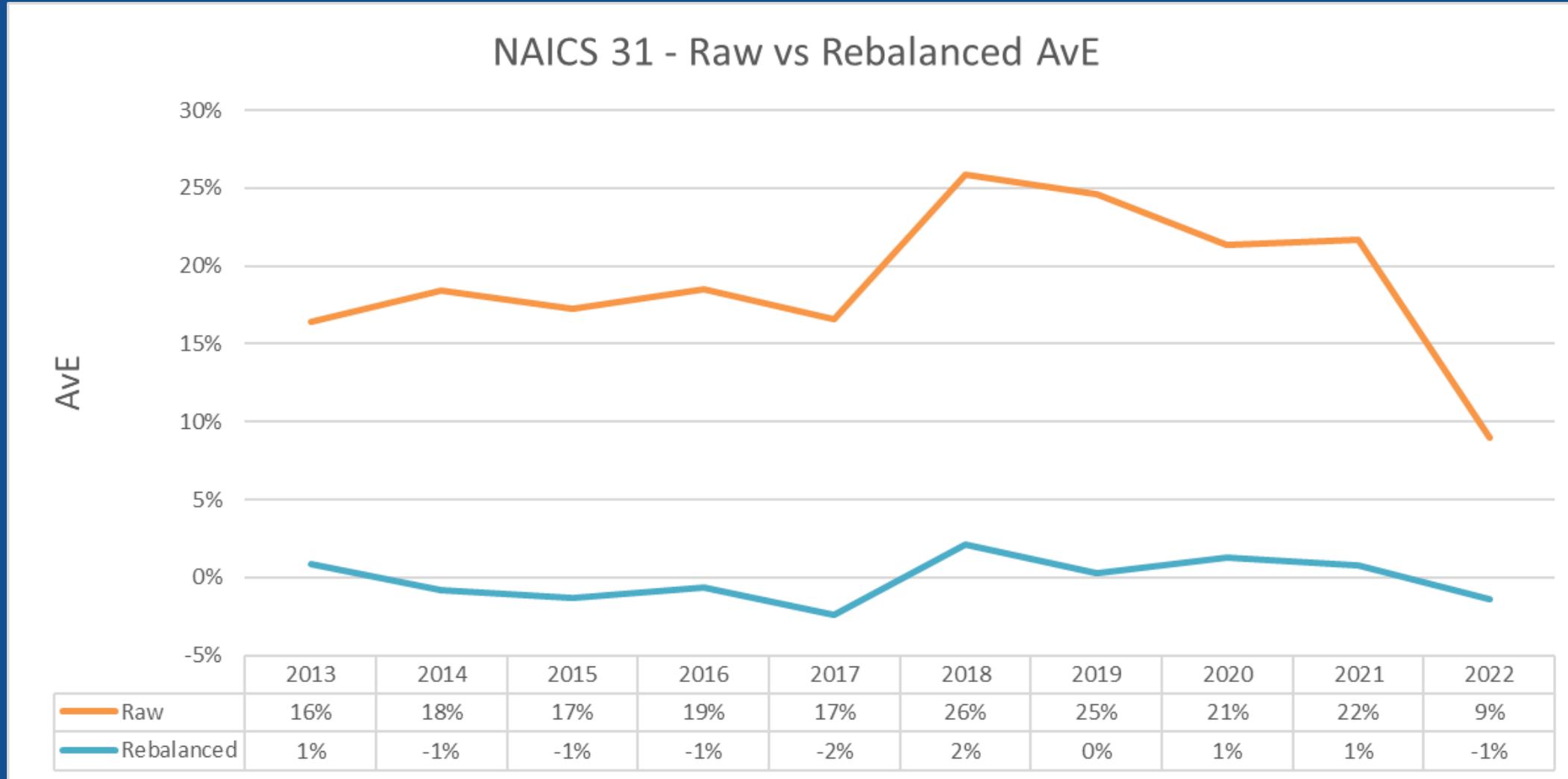
Retrospective Accuracy (or AvE) is $ELR / ALR - 1$

Rebalanced to Remove Statewide Estimation Error (Exh 1.2)

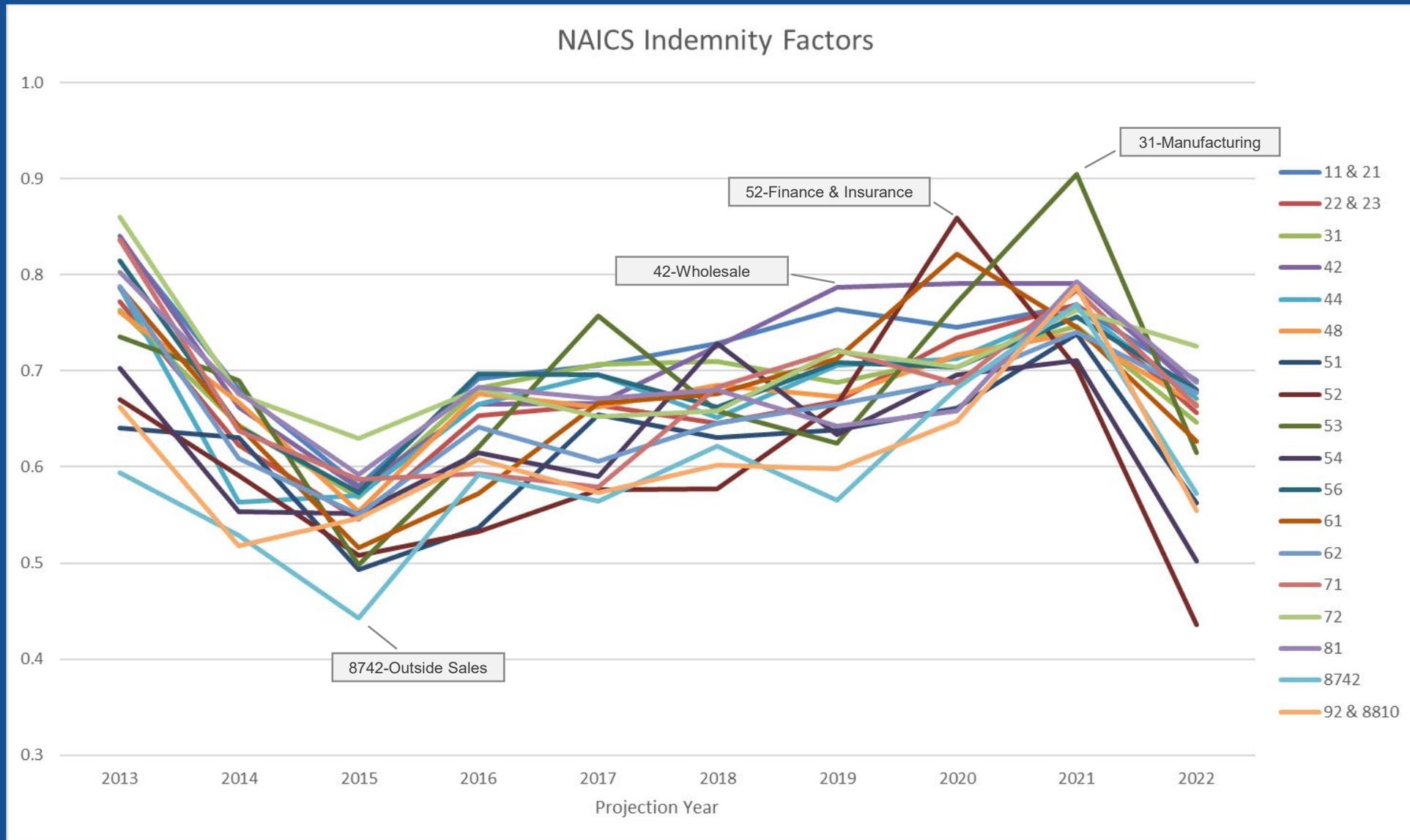
ELR Retrospective Accuracy Using Current (NAICS Sector) Method
Rebalanced to Remove Statewide ELR Error

NAICS	NAICS Description	Experience Period for Projection Year:									
		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
11 & 21	Agriculture & Mining	-8.7%	-2.8%	-3.6%	-5.1%	-7.1%	-5.6%	-3.4%	-1.4%	-2.9%	-6.7%
22 & 23	Utilities & Construction	-3.5%	1.0%	-3.1%	-4.7%	-1.2%	3.4%	1.6%	0.4%	-3.8%	-5.3%
31	Manufacturing	0.9%	-0.8%	-1.3%	-0.6%	-2.4%	2.1%	0.3%	1.3%	0.8%	-1.4%
42	Wholesale	-1.1%	0.8%	1.3%	-1.5%	1.3%	-1.6%	-3.1%	-0.4%	-7.7%	-2.9%
44	Retail	5.8%	-1.5%	1.7%	-0.9%	1.7%	-1.3%	0.4%	-2.3%	-2.8%	0.4%
48	Transportation & Warehousing	-3.8%	1.9%	-4.4%	-1.0%	1.0%	4.1%	-3.5%	-0.5%	-4.8%	-5.3%
51	Information	-6.2%	-1.2%	2.0%	-6.4%	-2.7%	-7.2%	-5.8%	-9.3%	-6.2%	-2.1%
52	Finance & Insurance	3.9%	5.2%	8.5%	3.5%	3.7%	3.2%	-11.1%	-8.9%	13.4%	25.9%
53	Real Estate	-7.6%	7.1%	3.7%	-2.3%	-1.8%	2.5%	-5.0%	-4.5%	1.6%	4.0%
54	Professional Services	4.6%	3.9%	4.0%	1.0%	-1.5%	2.7%	1.2%	6.5%	7.5%	8.7%
56	Administrative	0.0%	0.6%	-4.6%	1.9%	7.0%	-2.2%	0.8%	-1.5%	1.2%	1.0%
61	Education	-8.4%	2.0%	-0.2%	-0.5%	-1.5%	-5.2%	-7.4%	-0.1%	2.3%	1.9%
62	Health	1.5%	-1.9%	0.3%	2.4%	-0.3%	-0.5%	-1.2%	-1.4%	2.6%	-2.1%
71	Arts & Entertainment	-3.5%	-5.3%	5.1%	3.4%	-0.4%	-5.6%	2.6%	1.3%	0.8%	-10.0%
72	Hospitality	-1.8%	-2.2%	1.8%	3.9%	2.3%	1.7%	1.9%	-2.5%	-4.6%	-1.7%
81	Other	-5.0%	-2.7%	2.0%	2.8%	0.1%	-0.9%	-2.6%	-7.4%	-4.2%	1.1%
8742	Outside Sales	-3.5%	2.0%	-5.8%	0.5%	-6.2%	2.5%	-4.3%	2.8%	5.0%	5.2%
92 & 8810	Clerical & Public Admin	0.5%	-4.3%	4.4%	5.3%	2.2%	3.1%	-1.4%	-3.9%	11.5%	19.2%
Total		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pre-Rebalanced Total		15.4%	19.5%	18.9%	19.3%	19.4%	23.3%	24.2%	19.8%	20.8%	10.5%

ELR Retrospective Accuracy for NAICS 31 – Manufacturing



Projected Indemnity ELR Factors by NAICS Sector (Exh 2.1)



Clustering Analysis Overview

Clustering analysis has been conducted in the following two ways:

- Risk-based: actual loss rate for all 464 classifications with 10 years of experience
- Factor-based: actual loss rate divided by indicated limited loss to payroll ratio from classification relativity

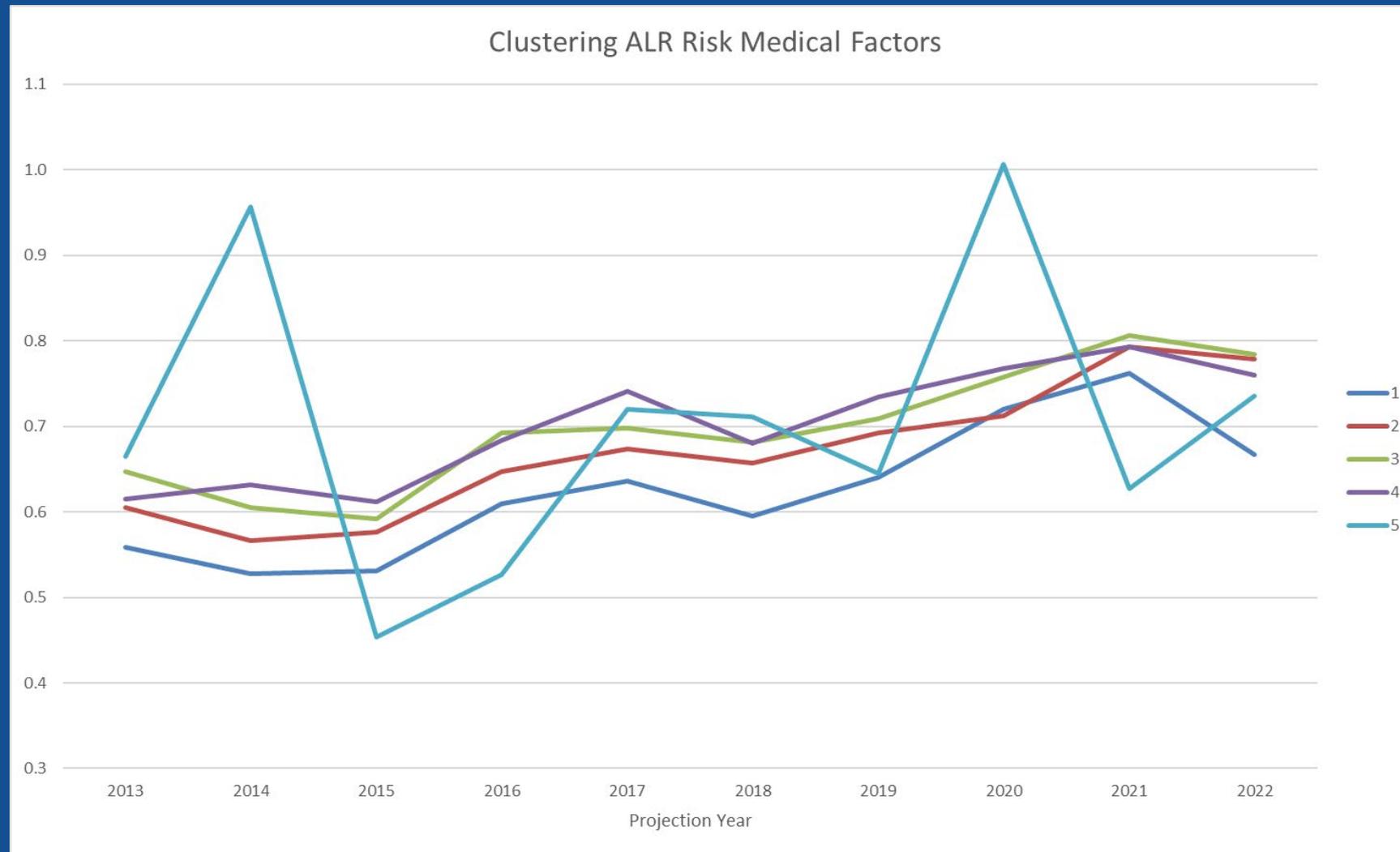
Based on the Elbow and Silhouette methods, we determined that the optimal number of clusters is 5

Run k-means clustering using several measures, where the combined Indemnity and Medical ALR with 10 years of experience (excluding the highest and lowest observations) was selected

Assignments are compared for consistency and manual adjustments are applied where appropriate

Medical ELR Factors by Risk Cluster (Exh 2.4)

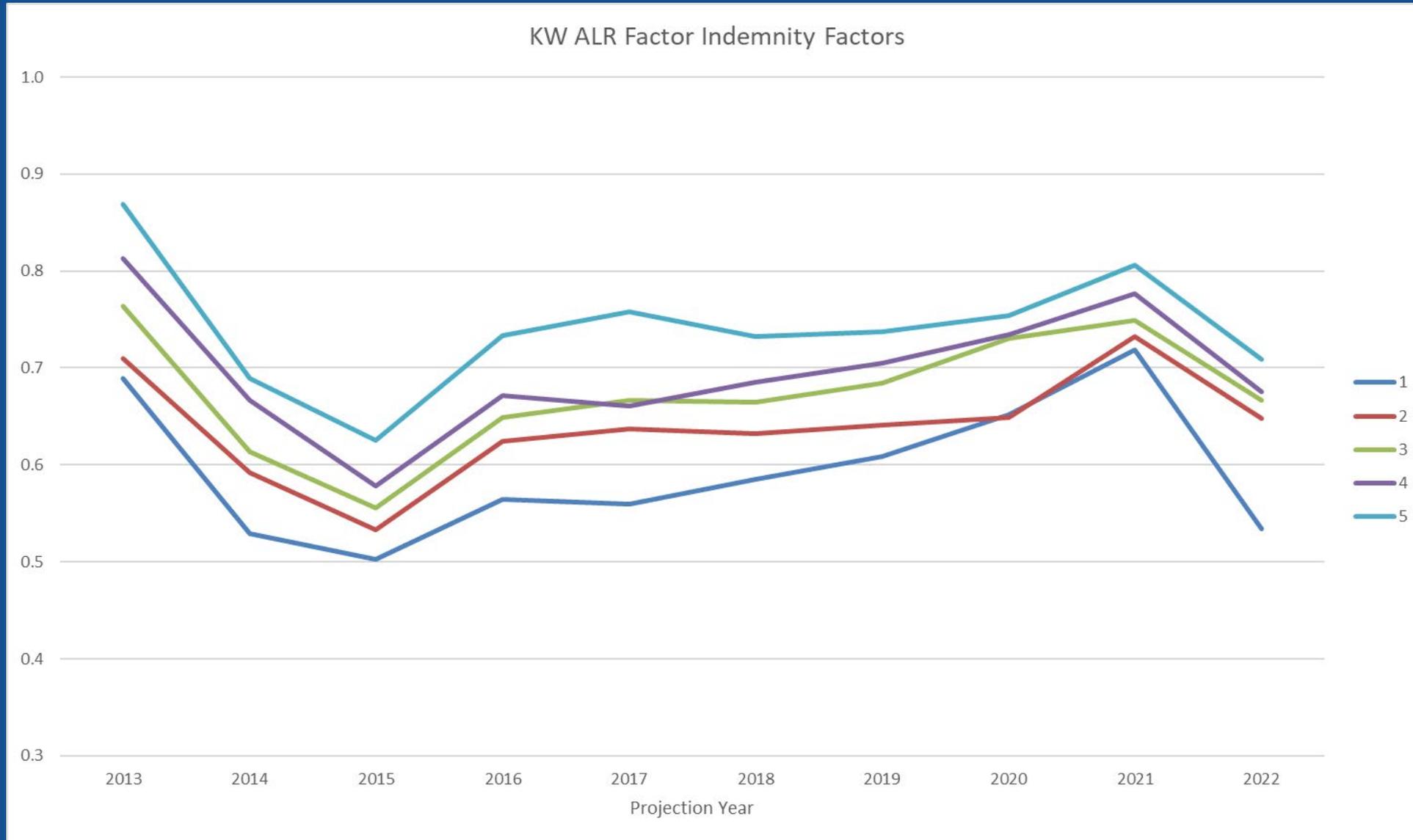
- Cluster 5 shows the largest variability due to data sparsity with less than 2% of class codes in this grouping



Kruskal-Wallis (KW) Bifurcation

- ❑ Median of ten years of indemnity and medical combined ALR factors are ranked
- ❑ The test statistic H is computed for each bifurcation of classifications:
 - The first statistic computed using the two lowest ALR factor classifications compared to the remaining 462 classifications
 - Then the first 3 to the remaining 461, ... 462 to 2
- ❑ The point at which the H statistic is largest is selected as the first bifurcation point to create two groups of classifications
- ❑ The method iteratively divides the data into groups until the KW test no longer shows statistical significance at a 0.05 significance level
- ❑ Based on this approach, five groups were indicated

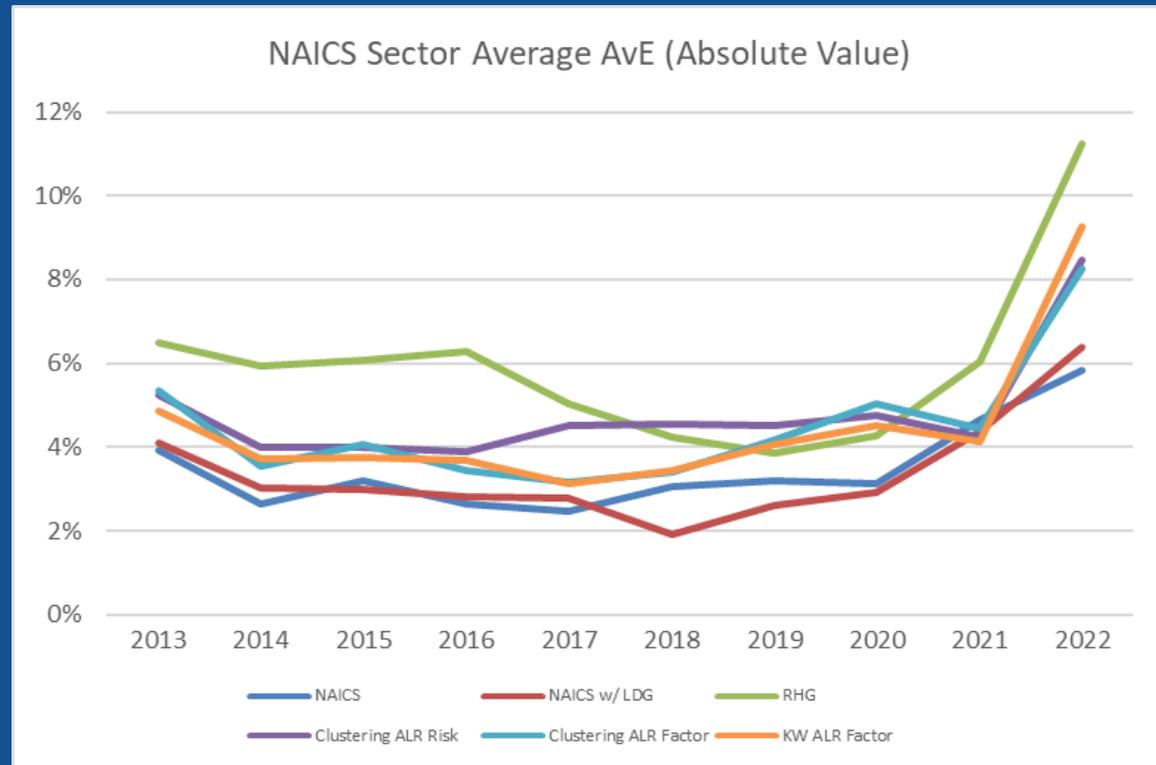
Indemnity ELR Factors by Kruskal-Wallis Bifurcation ALR Factor (Exh 2.6)



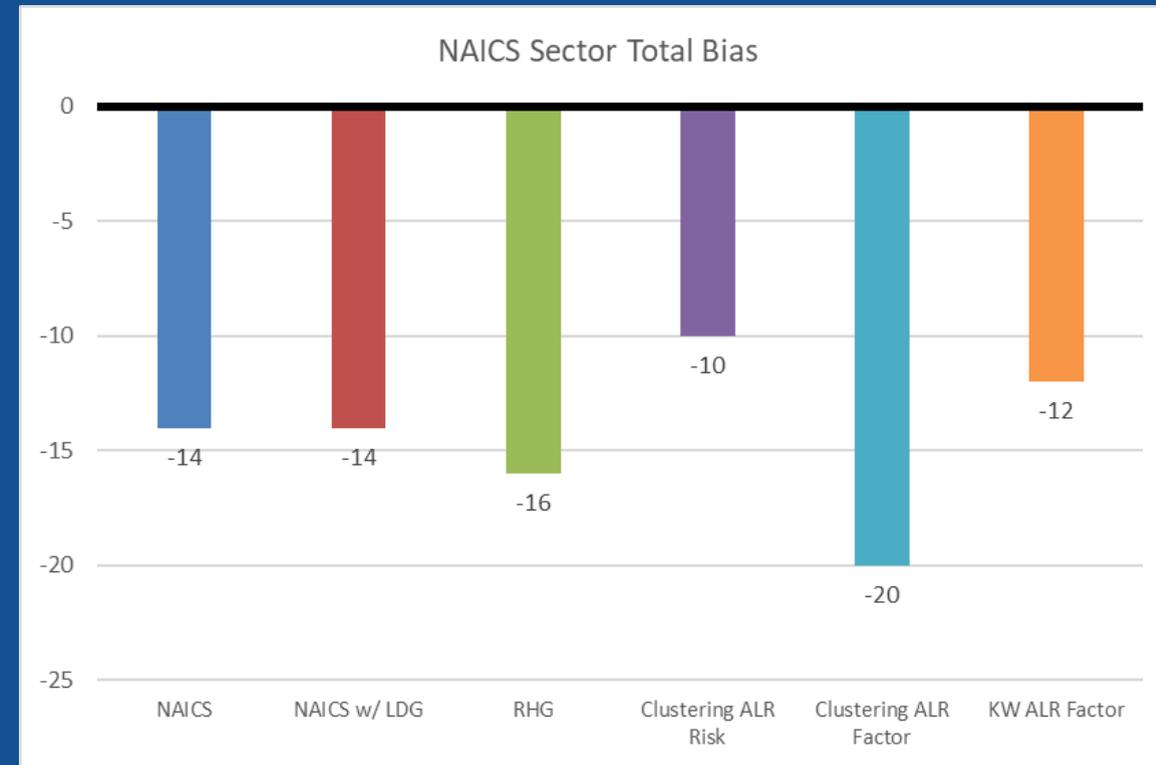
Retrospective Accuracy Using Different Methods (Exh 3)

Rebalanced to Remove Statewide ELR Error

NAICS Sector Average



	NAICS	NAICS w/ LDG	RHG	Clustering ALR Risk	Clustering ALR Factor	KW ALR Factor
rMSE	4.2%	4.2%	7.1%	5.9%	5.5%	5.5%

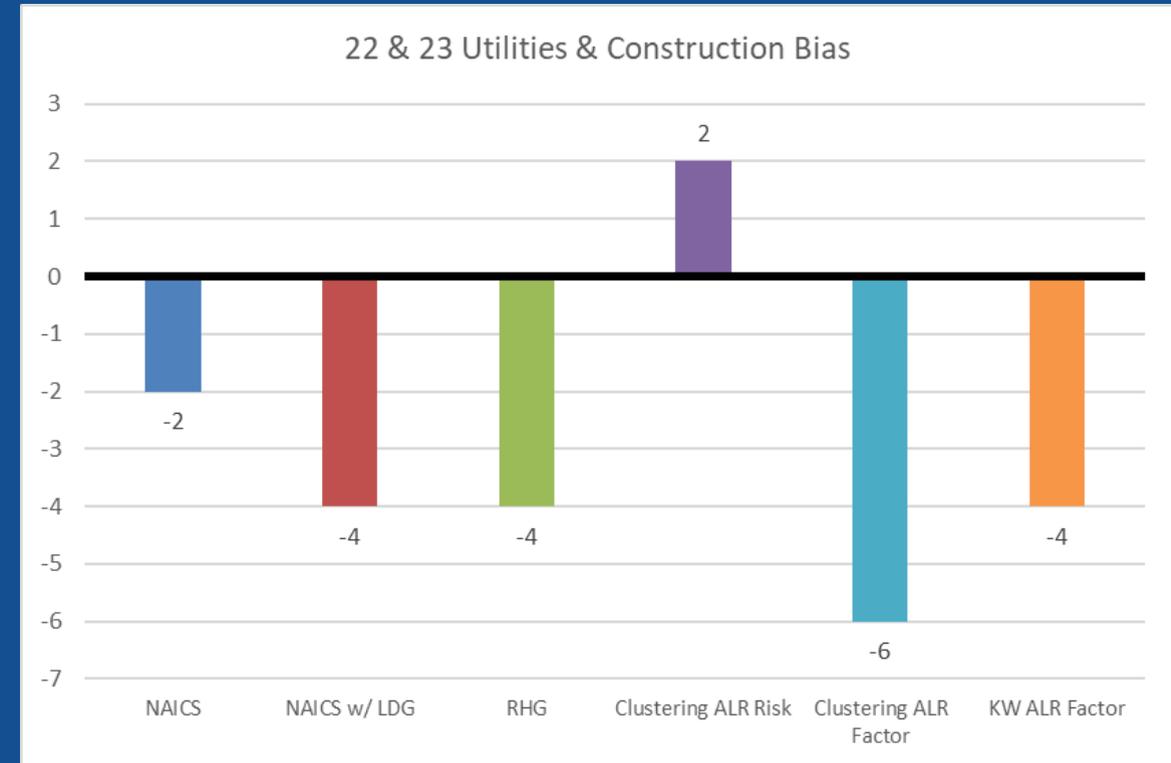
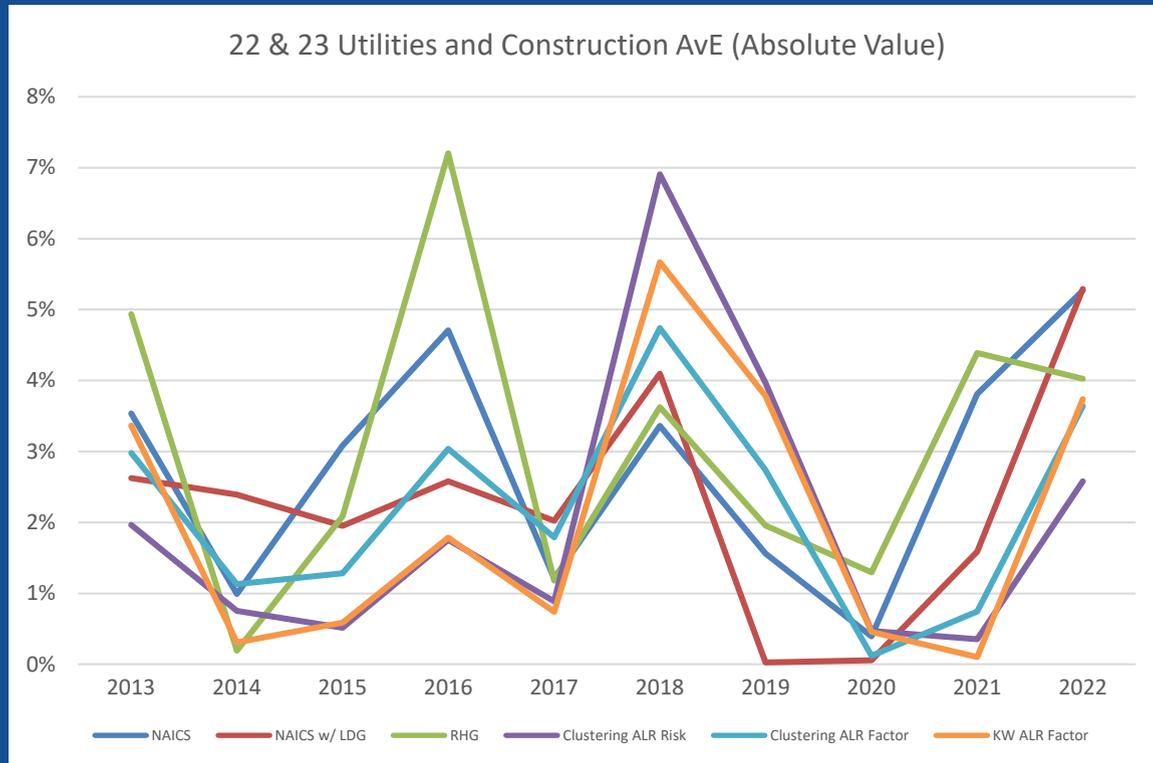


Bias is the [count of years with positive error] less [count of years with negative error]

Retrospective Accuracy Using Different Methods (Exh 3)

Rebalanced to Remove Statewide ELR Error

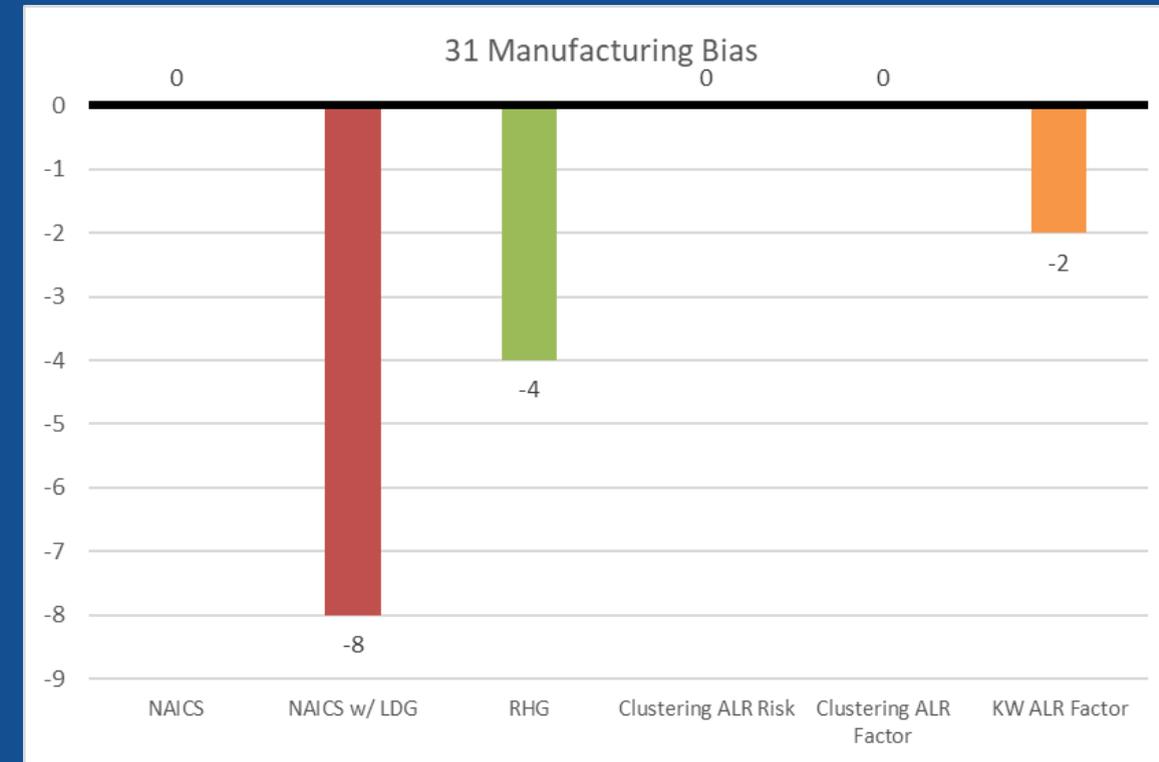
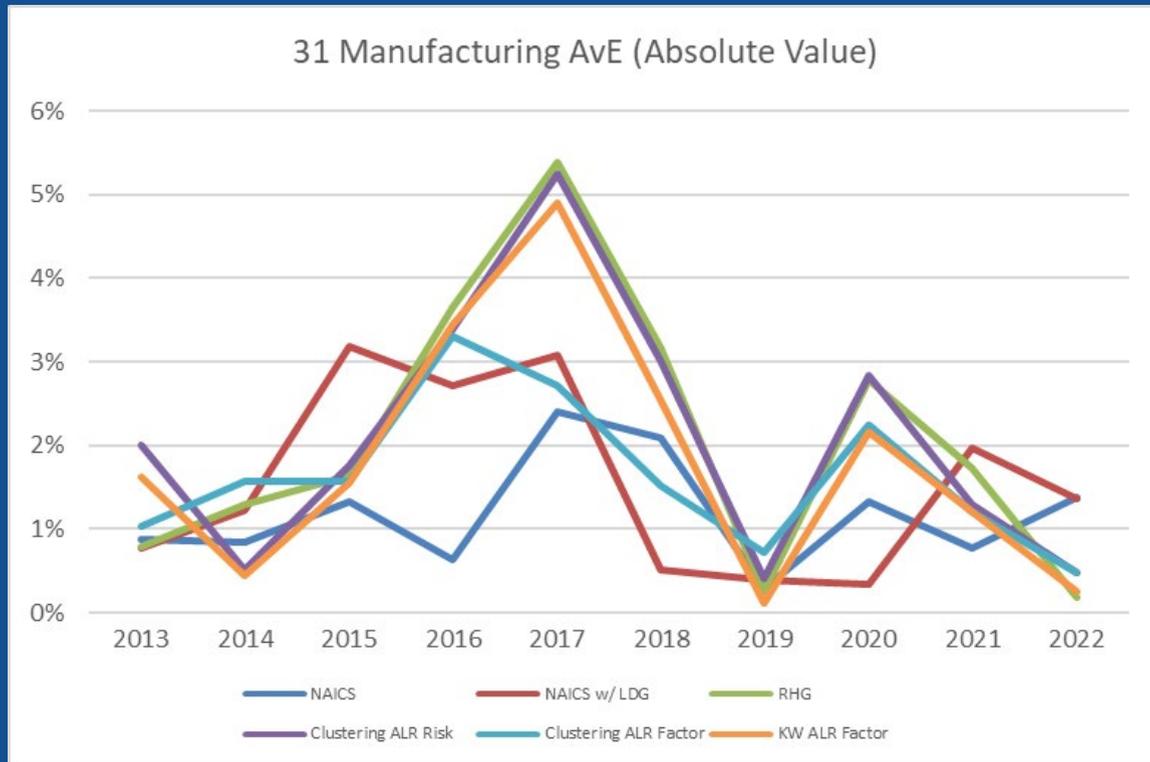
NAICS 22 & 23 – Utilities and Construction



Retrospective Accuracy Using Different Methods (Exh 3)

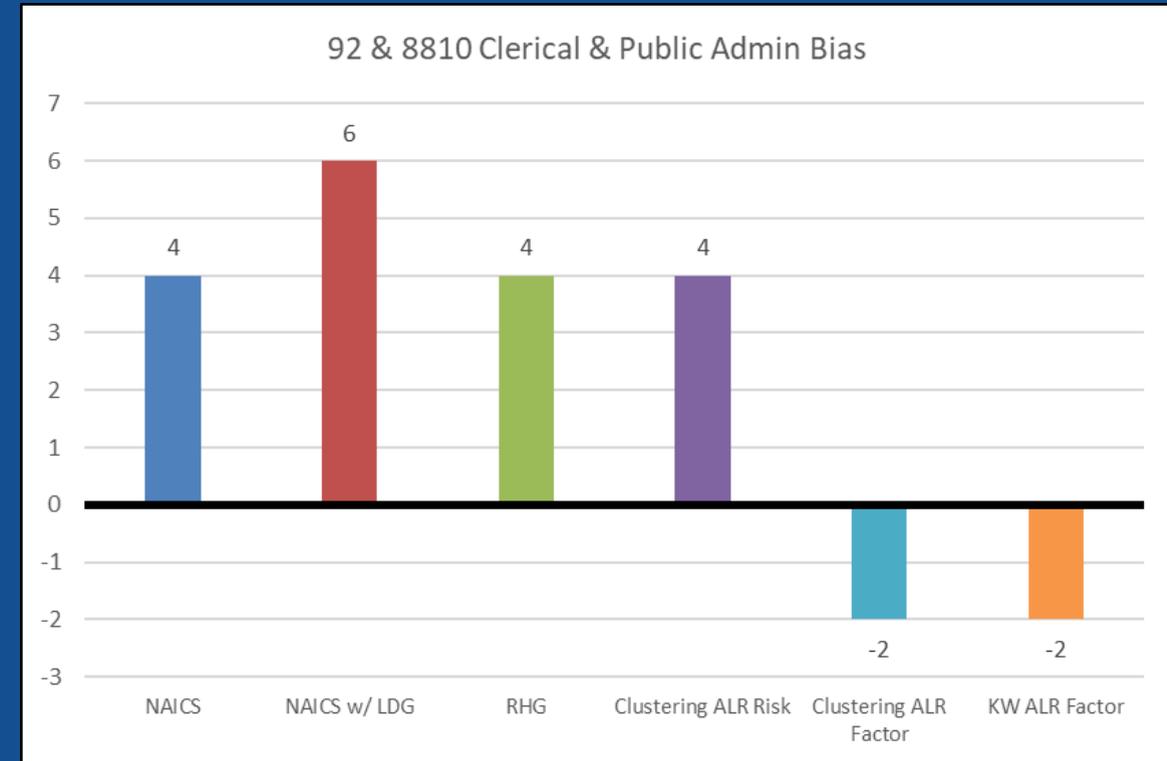
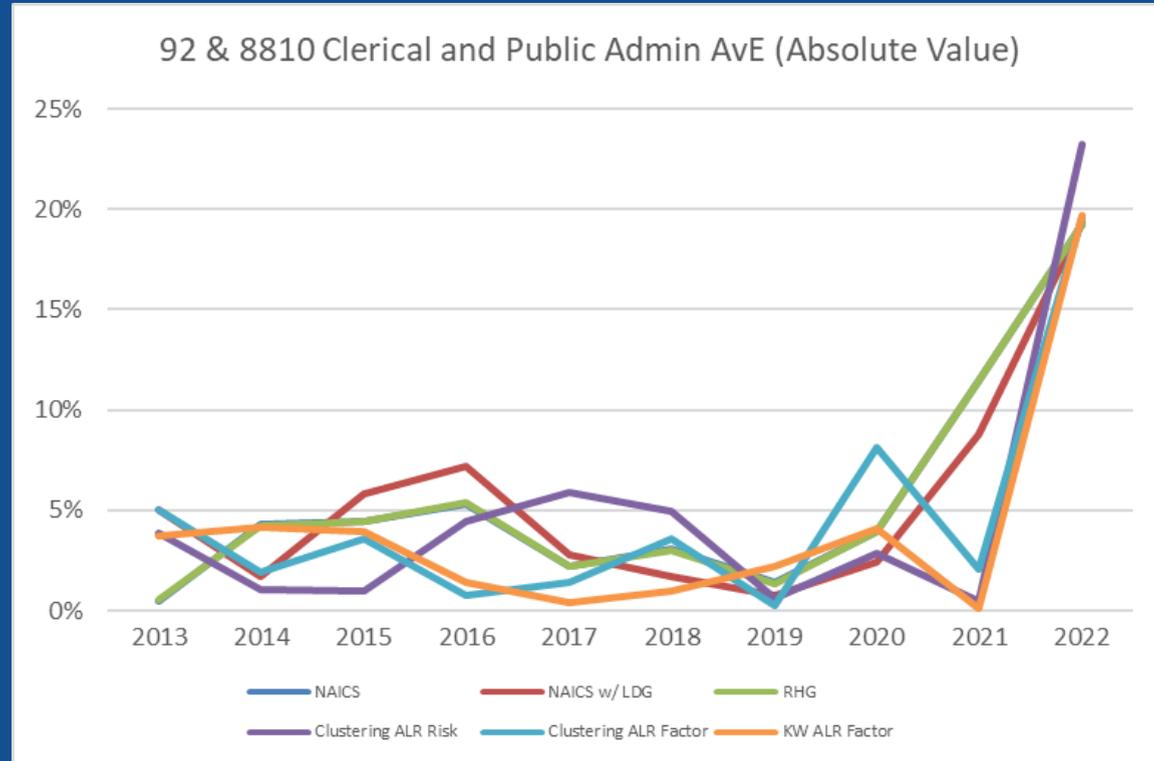
Rebalanced to Remove Statewide ELR Error

NAICS 31 – Manufacturing



Retrospective Accuracy Using Different Methods (Exh 3)

Rebalanced to Remove Statewide ELR Error
NAICS 92 & 8810 – Clerical & Public Admin



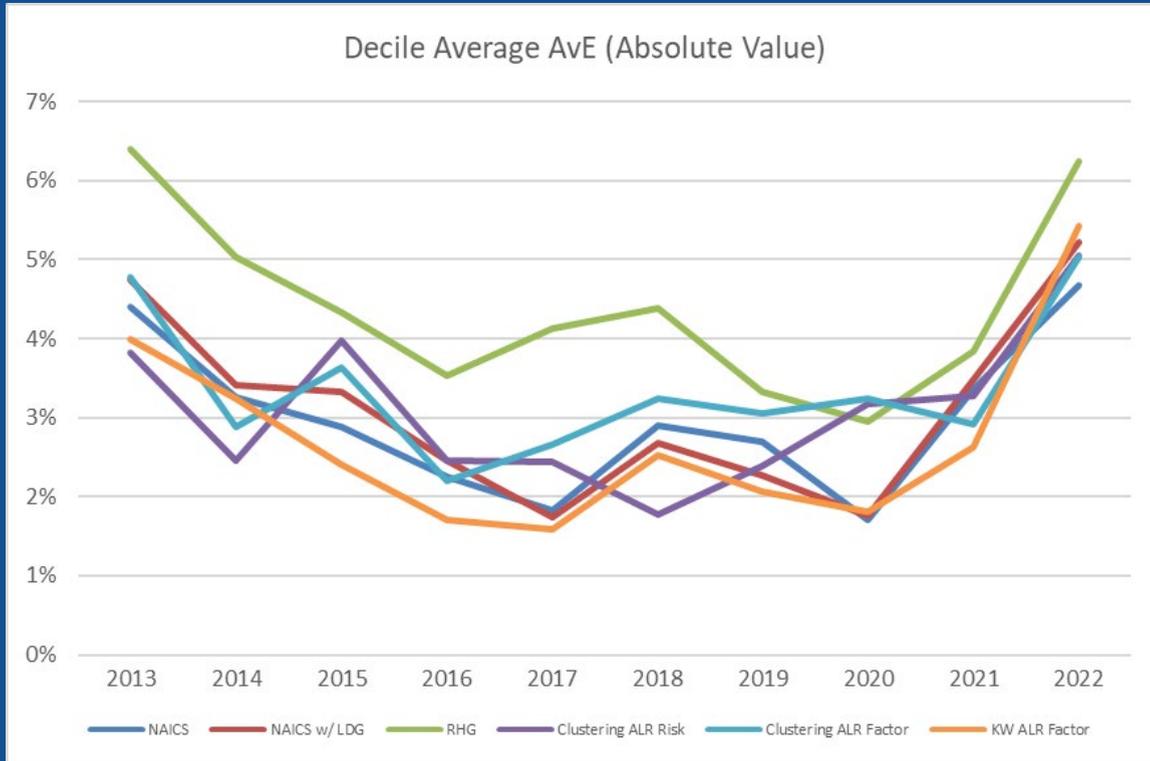
Decile Grouping

- ❑ All grouping methods are aggregated by decile to ensure results are not biased towards the NAICS sector method
- ❑ For each of the 464 classifications, actual loss rate is calculated for 10 years of experience
- ❑ The average actual loss rate is taken, excluding the highest and lowest observations
- ❑ The classifications are ranked and grouped based on the decile in which they fall
- ❑ Each group has either 46 or 47 classes distributed evenly

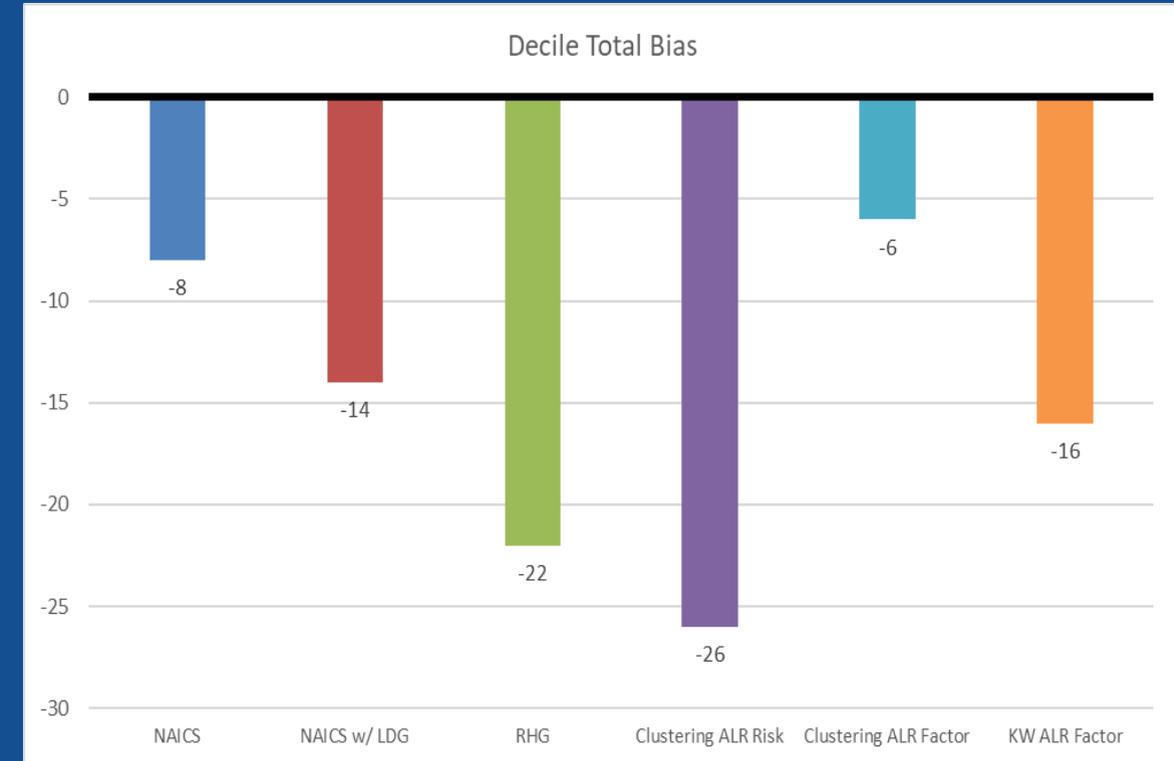
Retrospective Accuracy Using Different Methods (Exh 4)

Rebalanced to Remove Statewide ELR Error

Decile Average



	NAICS	NAICS w/ LDG	RHG	Clustering ALR Risk	Clustering ALR Factor	KW ALR Factor
rMSE	3.6%	3.8%	5.2%	3.9%	4.1%	3.5%

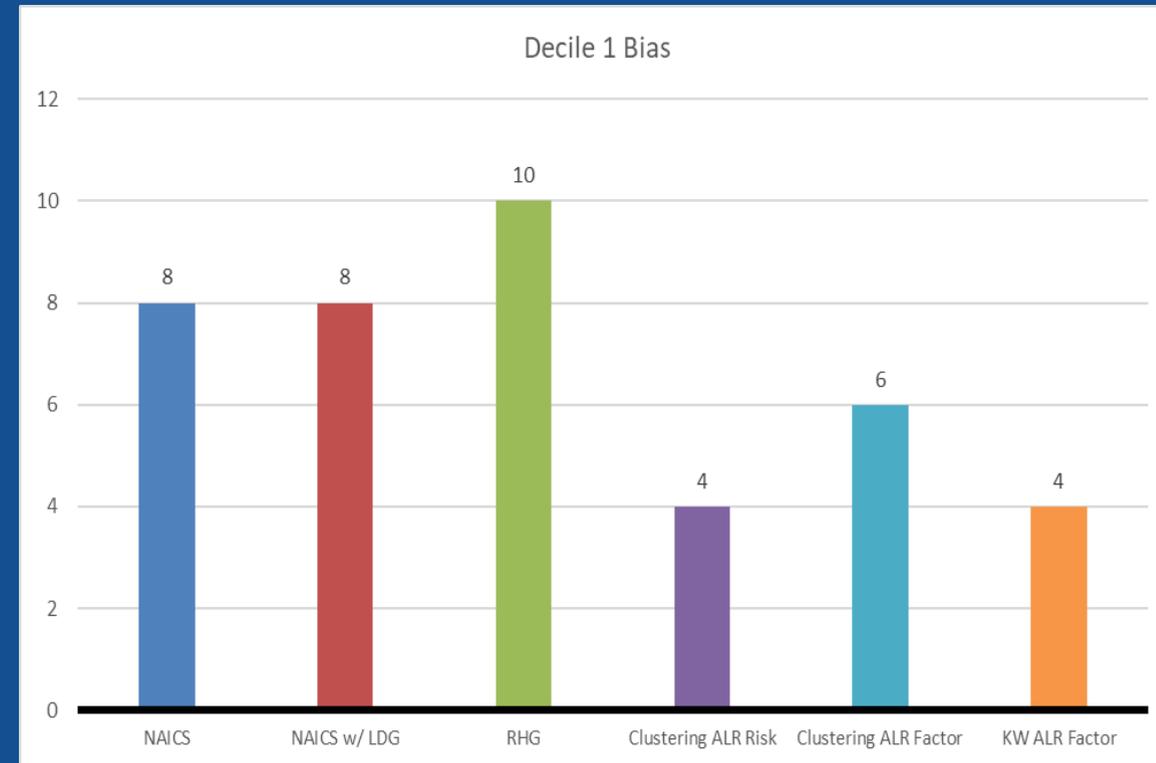
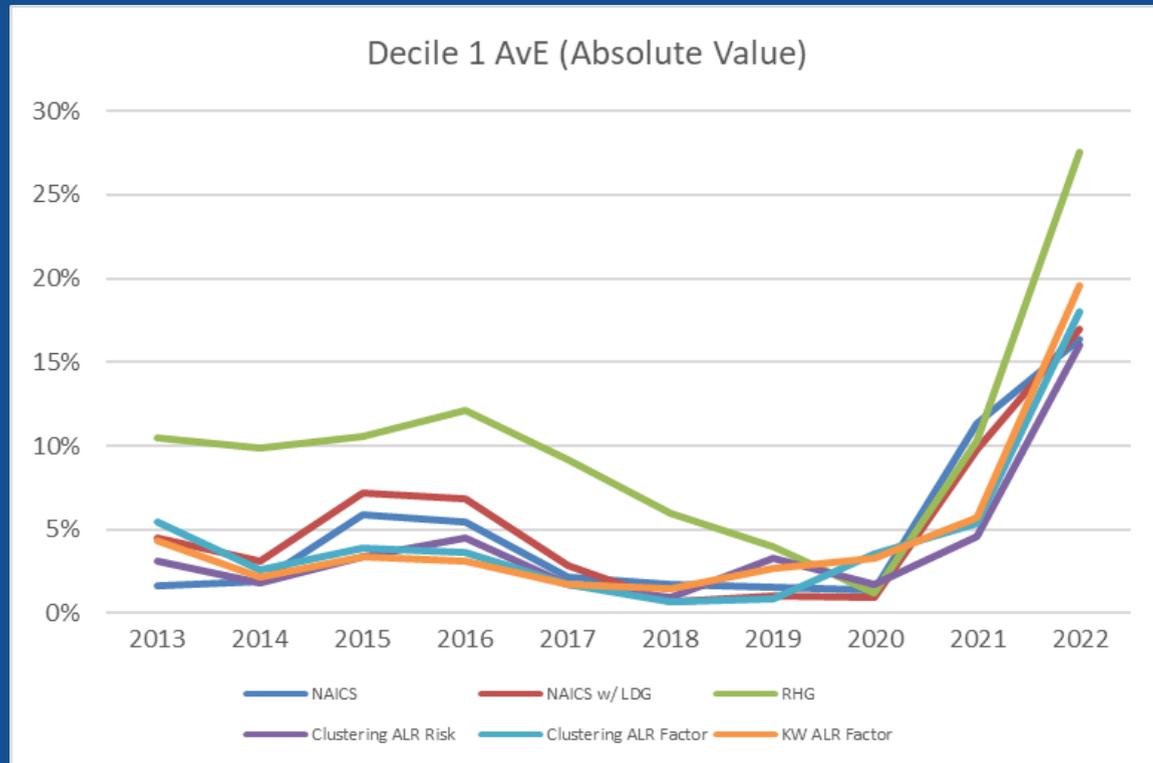


	NAICS	NAICS w/ LDG	RHG	Clustering ALR Risk	Clustering ALR Factor	KW ALR Factor
Bias	-8	-14	-22	-26	-6	-16

Retrospective Accuracy Using Different Methods (Exh 4)

Rebalanced to Remove Statewide ELR Error

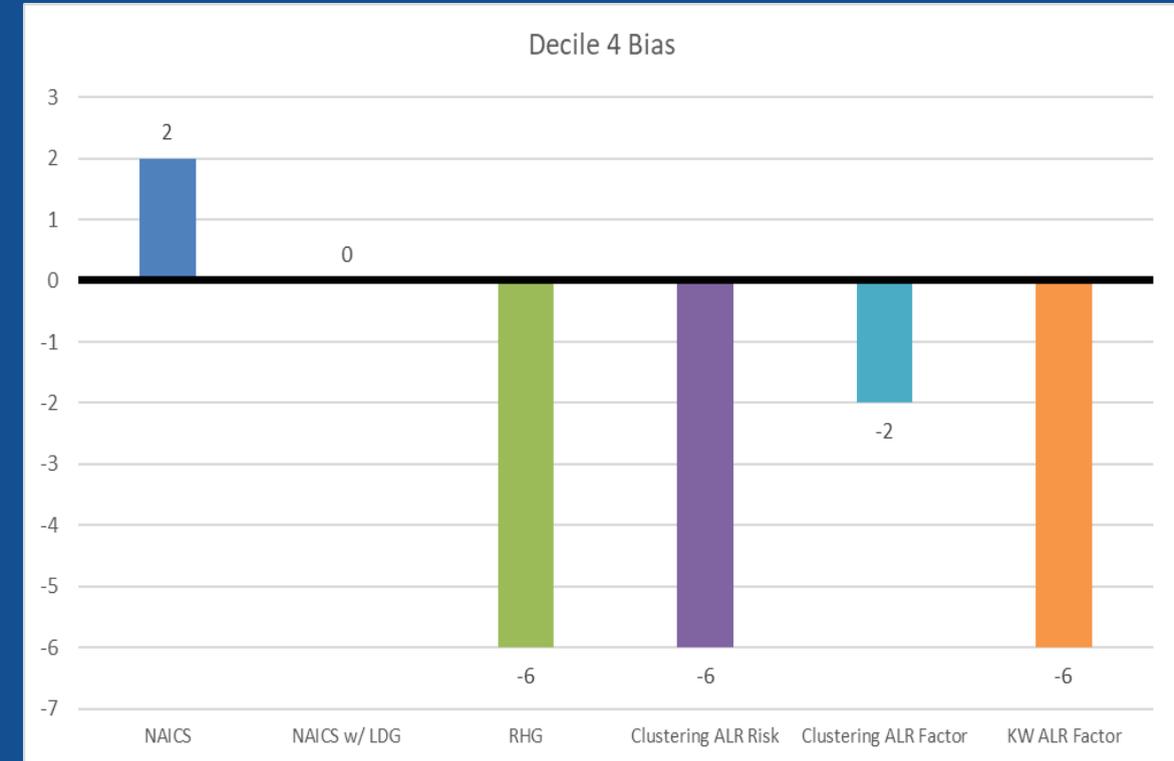
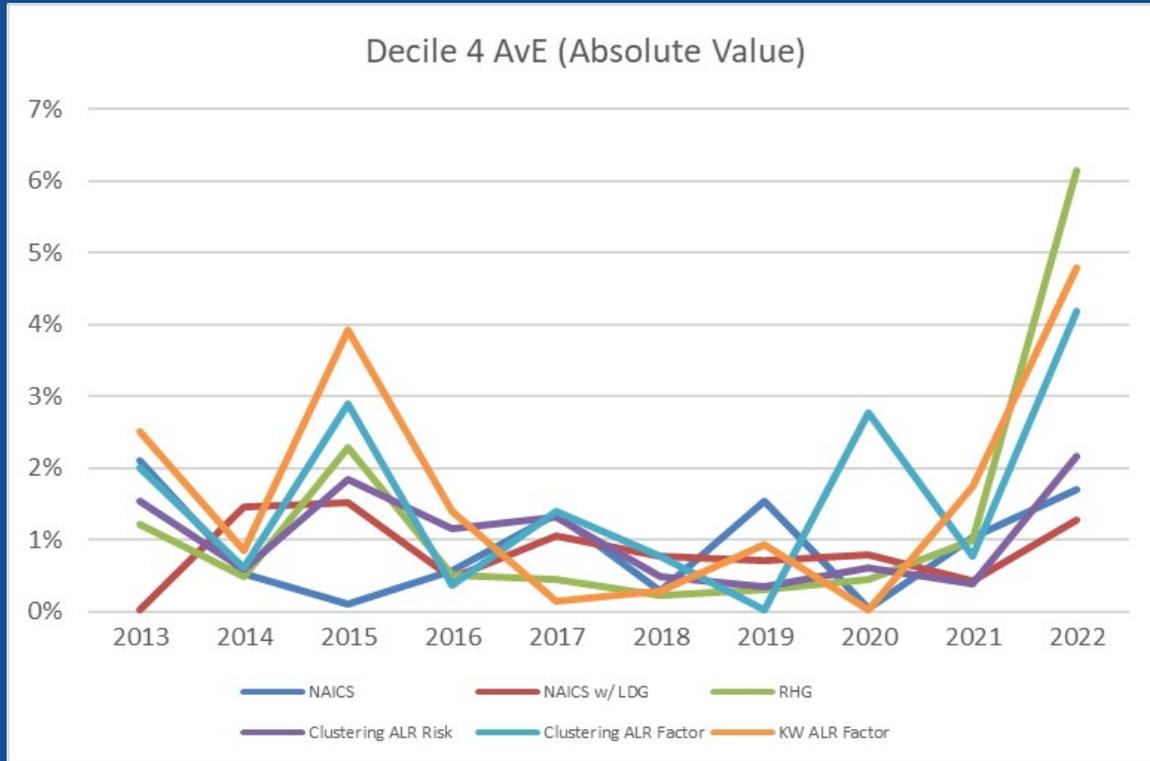
Decile 1



Retrospective Accuracy Using Different Methods (Exh 4)

Rebalanced to Remove Statewide ELR Error

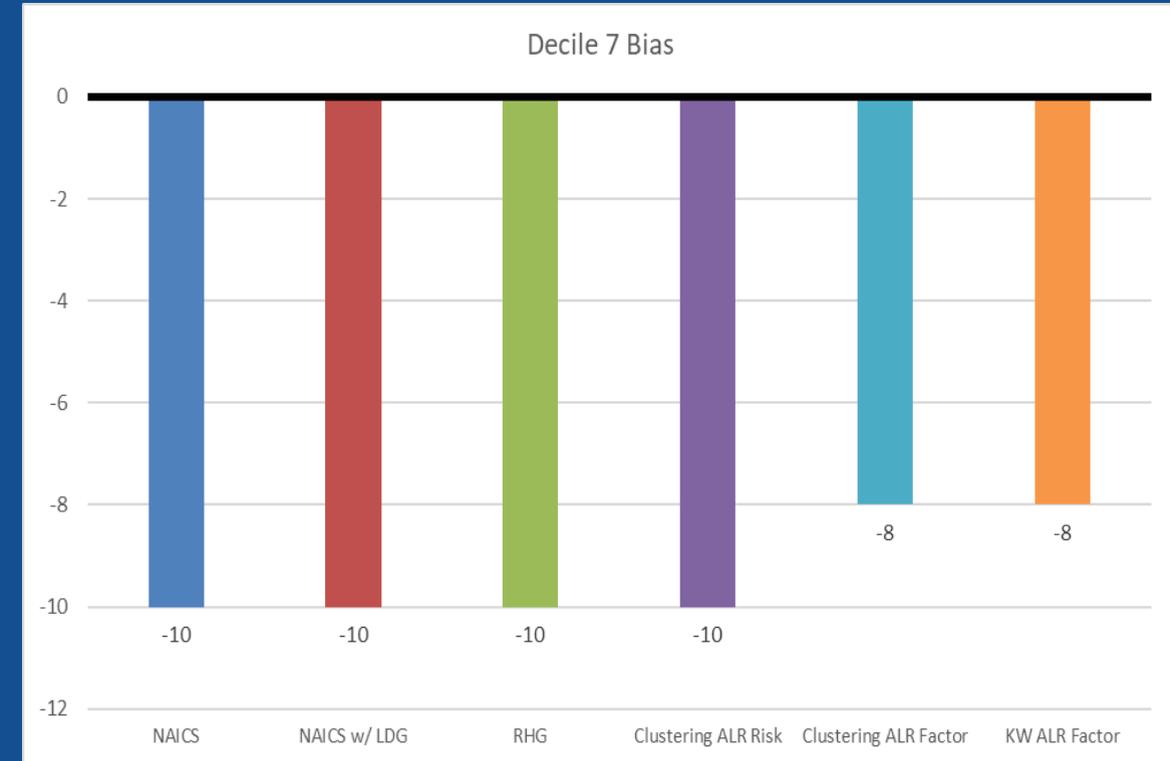
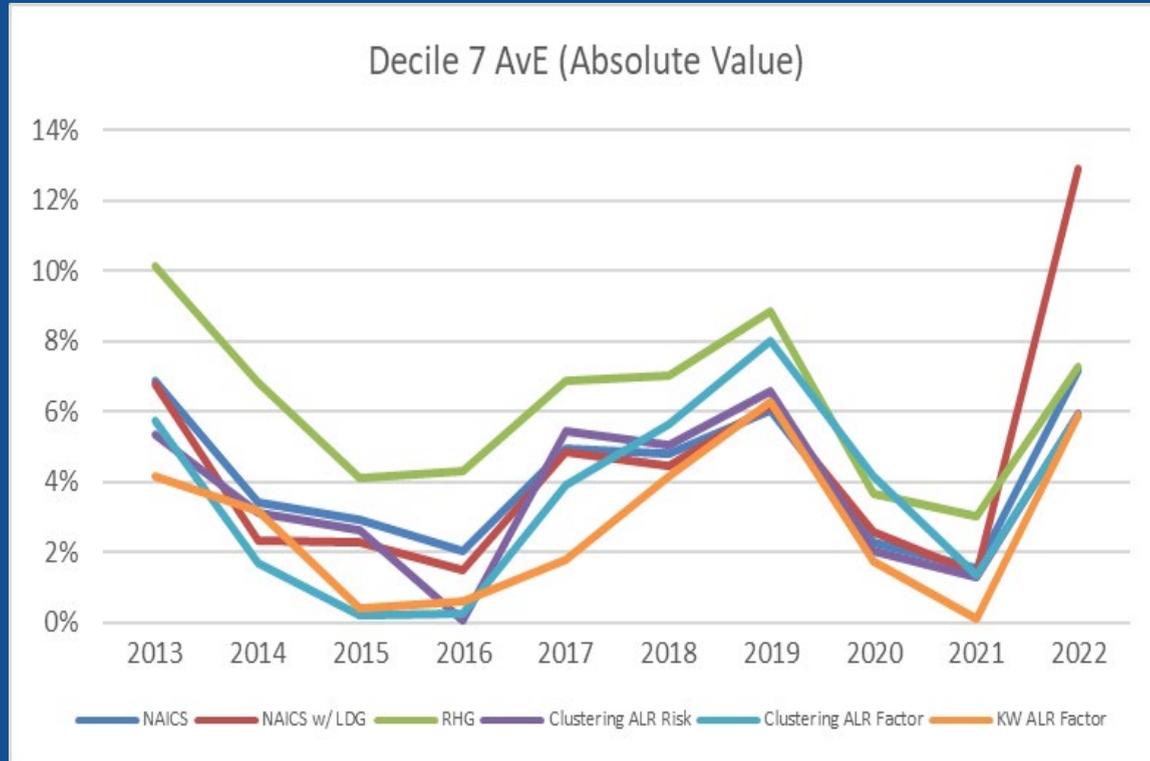
Decile 4



Retrospective Accuracy Using Different Methods (Exh 4)

Rebalanced to Remove Statewide ELR Error

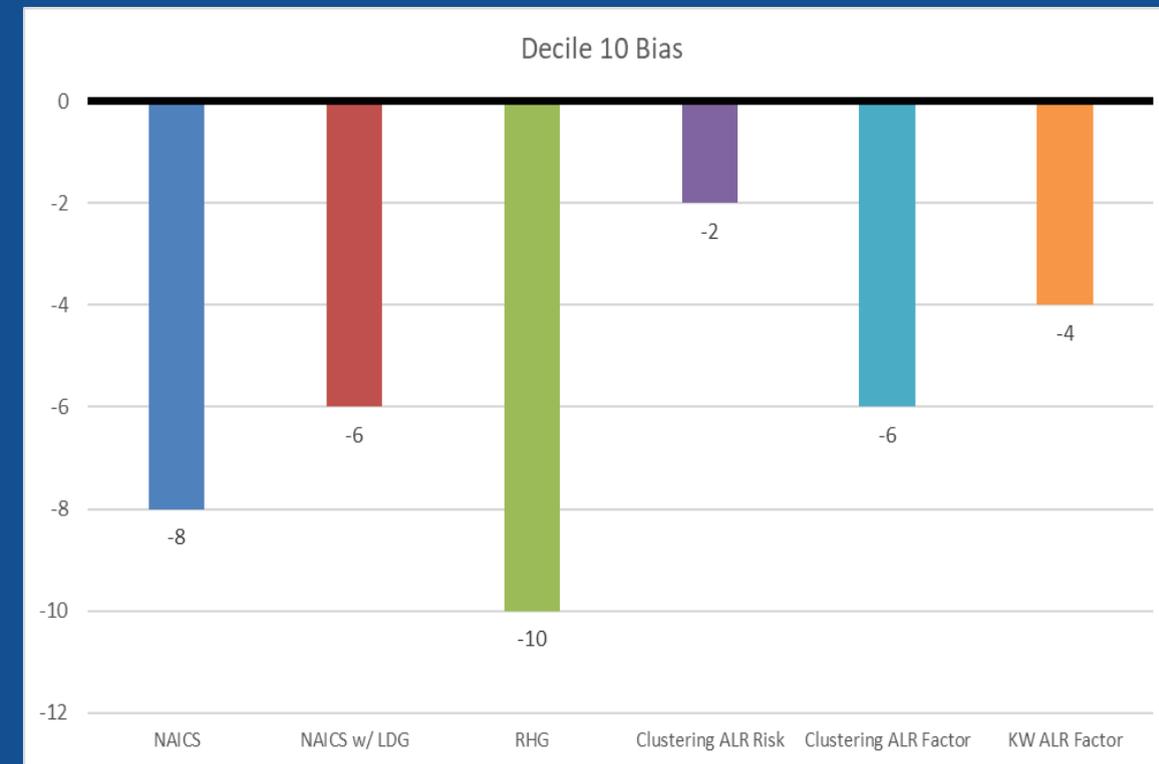
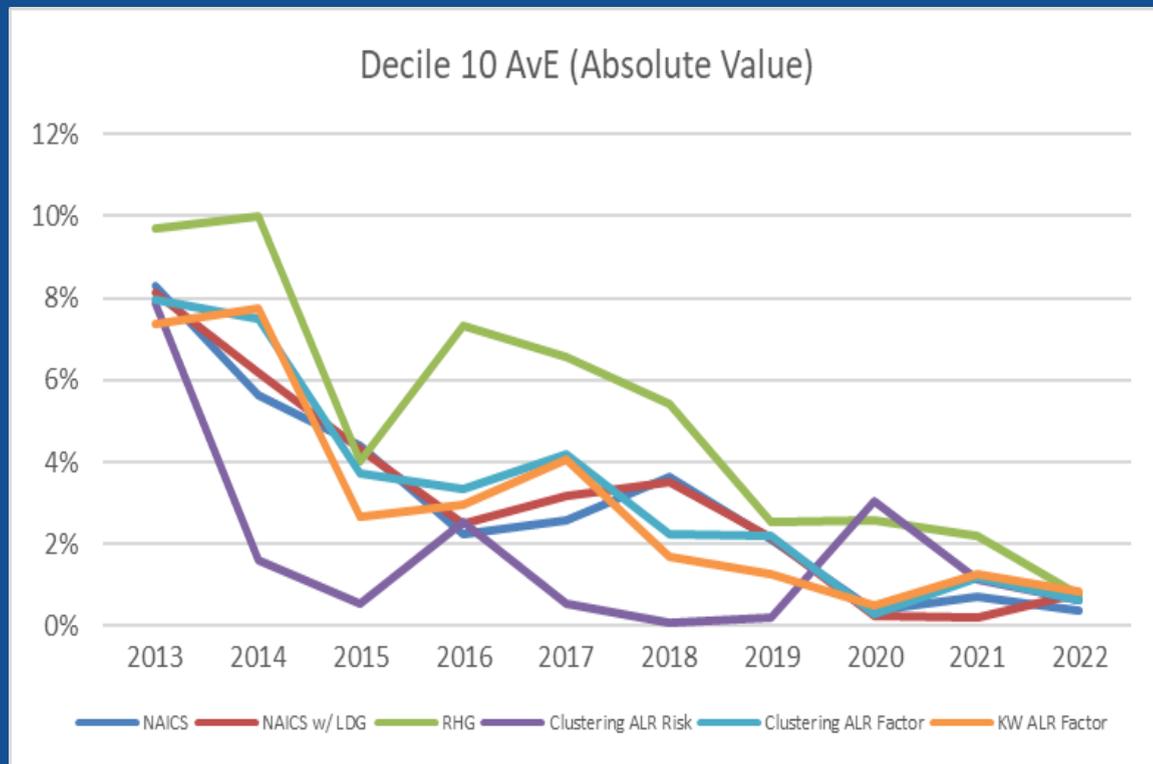
Decile 7



Retrospective Accuracy Using Different Methods (Exh 4)

Rebalanced to Remove Statewide ELR Error

Decile 10



Conclusions and Next Steps

Recommend keeping the current NAICS grouping, as various alternative tested groupings did not show significant improvements.

- Potential to combine some smaller NAICS groupings in the future

Areas of the ELR methodology staff plans to review in future phases of this study:

- Statewide estimation error
- Years of data used and input adjustment factors (such as the factor for the 11751.9 rerates)
- Swing limit for a classification's ELR relativity (currently 15% compared to 25% for pure premium ratemaking)
- Impact of reforms or large system changes (which may impact the statewide estimation)
- Off-balance factor methodology

03

9/1/2024 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
 - Latest four policy periods used
- 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 average mod based on weighted average over three periods
 - Latest PY (9/1/2023 to 8/31/2024) is partial and given 50% weight, other two PY given full weight
 - Selected average credibility based on 2022 (latest 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

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

wcirb.com



WCIRBCalifornia™
Objective. Trusted. Integral.

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