

WCIRB Actuarial Committee Meeting

August 4, 2020

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Agenda

- 1. AC20-08-01: Third Quarter 2020 Review of Diagnostics
- 2. AC19-08-05: Review of Loss Development Tail Methodology
- 3. AC20-04-04: COVID-19 Crisis
- 4. AC20-08-04: Impact of the Economic Slowdown on Pure Premium Rate Indications
- 5. AC20-06-01: 3/31/2020 Experience Review of Methodologies
- 6. AC19-08-04: Impact of Claim Settlement Rate Changes on ALAE Development
- 7. AC20-08-02: 1/1/2021 Filing Loss Adjustment Expense Experience Review
- 8. AC20-08-06: 1/1/2021 Filing Telecommuting Advisory Pure Premium Rate



Third Quarter 2020 Review of Diagnostics



Percentage of PPD Claims Closed by Region (Exhibit M5)





Filed Lien Counts (Exhibit M9.2)



Medicare Set-Aside by Age Interval (Exhibit M10)

Percent of Permanent Disability Claims Involving Set-aside by Age Range





Median – Second Survey Level

Source: WCIRB Permanent Disability Survey

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Independent Medical Review (Exhibit M14)





Source: DWC

Ratio of Incremental Closed Indemnity Claims to Prior Open Indemnity Claims (Exhibit C3.2)





Ratio of PD Claims to Indemnity Claims for Accident Year (Exhibit C17)



Comparison of Projected Loss Ratios – Indemnity (Exhibit D6.1)





Third Quarter 2020 Review of Diagnostics

Comparison of Projected Loss Ratios – Medical (Exhibit D6.1)





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First Quarter 2020 Review of Diagnostics

Comparison of Projected Loss Ratios – Indemnity (Exhibit D6.2)



Source: WCIRB aggregate financial data



Comparison of Projected Loss Ratios – Medical (Exhibit D6.2)





Source: WCIRB aggregate financial data

Comparison of Projected Loss Ratios – Indemnity (Exhibit D6.3)





Comparison of Projected Loss Ratios – Medical (Exhibit D6.3)





Severity – Incurred Indemnity Loss per Reported Indemnity Claim (Exhibit S2.1 – Updated)





Severity – Incurred Medical Loss per Reported Claim (Exhibit S2.2 – Updated)





Severity – Paid Indemnity Loss per Reported Indemnity Claim (Exhibit S4.1 – Updated)





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Third Quarter 2020 Review of Diagnostics

Severity – Paid Medical Loss per Indemnity Claim (Exhibit S4.2 – Updated)



Severity – Incremental Paid Medical per Open Indemnity Claim During the Development Period (Exhibit S7)





Average and Median Claim Severities at USR 1st Report Level (Exhibit S9)



2017 Severity Annual Change



Large Claims (Exhibit S16.3)



----First Report Level -----Third Report Level





Source: WCIRB unit statistical data

Temporary Disability Duration on Permanent Disability Claims (Exhibit S10.2)



Third Quarter 2020 Review of Diagnostics

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Review of Loss Development Tail Methodology



Review of Loss Development Tail Methodology

- Current methodology uses incurred development after 267 months
 - Used in lieu of paid due to dramatic shift in payment pattern in mid-1990s driving sharp differences in paid and incurred projections (2014 study)
 - Inverse power curve fit to incurred development (6-year average) used for development after 423 months
- August 2019 study showed inverse power curve fit to paid development (4-year average) is more stable
- March 2020 study showed that paid development from 264-to-420 months has been more accurate than incurred development during recent calendar years
- Committee recommended review of claim settlement rate impact on late period paid development given recent sharp increase in settlements



Review of Settlement Rate Impact on Late Period Development

- March 2020 review of medical transaction data showed decreases in medical services paid as more claims close
- Staff reviewed several potential approaches to reflect settlement rate changes in late period development
 - Statistical model (similar to ALAE) did not fit well to paid medical factors
 - Incremental approaches were too volatile at later periods
- Staff's recommended approach involves adjustment to paid age-to-age factors for projected change in open claim rate
 - Based on data from 264 months through 372 months
 - Projected open rate for more recent AYs compared to historical AY open rate at same age
 - Selected age-to-age factor is adjusted directly based on this relationship
 - Potential tempering based on historical observed relationship



Indemnity Claim Open Rate (Exhibit 1.3)

As of March 31, 2020





Late Period Paid Development Adjustment Approach Medical for 324-to-336 Months

- 1. Average Open Claim Rate for Last 3 CYs @324 = 0.4%
- 2. Projected Open Claim Rate for 2019 @324 = 0.2%
- 3. Open Claim Adjustment Ratio (2) / (1) = 0.44
- 4. Average 324-to-336 Paid Medical LDF for Latest 3 CYs = 1.004
- 5. Adjusted 324-to-336 Paid Medical LDF for 2019 [(4) 1.0] x (3) + 1.0 = 1.002
- Key assumptions:
 - 3-year average of historical years used to select open rate and LDF (1 and 4)
 - Projected open claim rates (2) based on
 - Latest year indemnity claim development pattern
 - Average of latest three years' ultimate claim disposal rates ([incremental closed claims] / [prior reported open + IBNR claims])
 - Staff reviewed historical relationship to potentially temper open claim adjustment ratio (3)



Open Claim Rate Compared to Paid Medical Development Example from CY 2011 (Exhibit 2)







Retrospectively Indicated Adjustments to Change in Open Claim Share to Approximate Change in Medical Development (Table 1)

Gap from Base Year	Number of Observations	Average Adjustment	Median Adjustment	Correlation between Changes
3 Years	84	72%	47%	0.17
4 Years	56	75%	43%	0.22
5 Years	35	39%	43%	0.43
6 Years	20	43%	39%	0.30

Overall correlation between Open Rate and Development = 0.77 Selected Adjustment = 40%



Extrapolating Approach to Post-384 Month Development

- Sufficient indemnity claim count data not available after 372 months
- Staff assumed adjustment ratio for 384 through 420 months based on average for 348, 360, and 372 months (0.45)
 - Has overall minor impact due to sparse development at these ages
- For tail development factor applied after 420 months, staff fit the inverse power curve to the adjusted paid factors

Current Tail Development Methodology

- Tail factor after 423 months based on inverse power curve fit to incurred development (2016 study)
 - Fit to 6-year average of 111-to-123 through 339-to-351 factors
 - Extrapolated to 80 development years
 - Latest 3 CYs excluded based on anomalous incurred development over last several years
- At 8/1/2019 meeting, Committee reviewed study of tail factor approach
 - Inverse power curve fit to 4-year average paid development was most stable
 - Other parameters of tail factor approach continued to be appropriate



Review of Alternative Medical Tail Development Fits





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Staff Recommendations

- Development prior to 264 months:
 - Continue to use prior selected method (latest-year / 3-year average paid)
 - Settlement rate changes likely impact development prior to 264 months but so do other factors
 - Recommend this period to be further studied
- Development from 264 to 420 months:
 - Use 3-year average paid with recommended adjustment for changing claim settlement rates
 - Includes 40% adjustment to the open rate ratio based on historical relationship
- Development after 420 months:
 - Use inverse power curve fit to 4-year average paid after adjusting for changing claim settlement rates



Impact of Staff Recommended Changes to Development Projected for AY 2019 (Table 2)



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COVID-19 Crisis


January 1, 2021 Pure Premium Rate Filing





to PY 2021



COVID-19 Crisis

Potential Exposure Impacts Based on WCIRB Employer Surveys (May – July)



Indemnity Transaction Data Sources for Assumption Modeling

Voluntary Indemnity Transaction Data

- First Report of Injury (FROI) and Subsequent Report of Injury (SROI) data from voluntary participants corresponding to almost 20% of pure premium
- Robust distribution of locations and class codes but not a random sample
- Reflects insured population only
- Mandatory Indemnity Transaction Data
 - Begins with Q2 2020 data
 - Expect to have data for most of the insured market by 9/30/2020
- Summary Data from DWC
 - Reflects full population of WC (both insured and self-insured)
 - Self-insured population is about 1/3 of payroll
 - Through 7/23/2020, around 63% of COVID-19 claims were from the insured population
- Identified claims by Nature of Injury and Cause of Injury codes of 83 or presence of "COVID-19" or "coronavirus" in the accident description
- FROI records are submitted for all claims, not just med-only claims
- All data is very preliminary and reflects metrics we expect to review throughout the year



Total Claims Reported by AQ (excluding COVID claims) Relative to the Number Reported in 2018 Q1





Indemnity Claims Reported by AQ (excluding COVID claims) Relative to the Number Reported in 2018 Q1





Source: SROI records for claims where we have both FROI and SROI records from WCIRB indemnity transaction data from insurers who submitted as part of the voluntary program.

Total and Indemnity Claim Count Development from 3 to 6 Months (excluding COVID claims)





Source: Total counts are based on FROI records. Indemnity Counts are based on SROI records. Both are from WCIRB indemnity transaction data from insurers who submitted as part of the voluntary program.

Indemnity Claims as a Share of Total Claims (excluding COVID claims)





Source: Total counts are based on FROI records. Indemnity Counts are based on SROI records. Both are from WCIRB indemnity transaction data from insurers who submitted as part of the voluntary program.

Continuous Trauma Claims Reported by AQ Relative to the Number Reported in 2018 Q1





Source: SROI records for claims where we have both FROI and SROI records from WCIRB indemnity transaction data from insurers who submitted as part of the voluntary program.

Continuous Trauma Claims Reported as a Share of Indemnity Claims Reported by AQ (excluding COVID claims)





Source: FROI and SROI records for claims where we have both FROI and SROI records from WCIRB indemnity transaction data from 44 insurers who submitted as part of the voluntary program.

Comparison of Count Development for CT and Indemnity Claims by AQ (excluding COVID claims)





Source: SROI records for claims where we have both FROI and SROI records from WCIRB indemnity transaction data from insurers who submitted as part of the voluntary program.

Reported Cumulative Injury Index by AQ (excluding COVID claims)





Source: FROI and SROI records for claims where we have both FROI and SROI records from WCIRB indemnity transaction data from insurers who submitted as part of the voluntary program.

Industries with Significant Changes in the Share of Claims 2020 Q2 Compared to Rolling Average of the Prior 4 Quarters

<u>Increases</u>

11 & 21	Agriculture & Mining
31	Manufacturing
62	Health Care and Social Assistance

Decreases

42	Wholesale Trade
61	Educational Services
71	Arts, Entertainment, and Recreation
72	Accommodation and Food Services
8810	Office and Clerical



Comparison of Modeled and Observed Age Distributions





Source: FROI records from WCIRB indemnity transaction data.

Comparison of Modeled and Observed Age Distributions





Source: FROI records from WCIRB indemnity transaction data.

Industry Distribution of Reported COVID-19 Claims





Source: FROI records from WCIS as of 7/08/2020

Share of Claims Denied

- Reasons for denied claims could include a negative test as well as the results of an Arising Out of Employment / Course of Employment (AOE/COE) investigation
- Per CWCI study, 70% of denials were due to a negative test
- Based on FROI data:
 - COVID Claims (Claims with an accident date in March through June): **21.2%**
 - Non-COVID Claims (Claims with an accident date in March through June): **0.9%**
 - COVID Claims (WCIS Data through 5/7/2020): **31.0%**



Comparison of Claim Closing Rates by Accident Month





Share of Claims Classified as Indemnity by the Claims Administrator by Accident Month





Filed WC Claims Compared to California COVID-19 Infections

Time Period	Filed WC Claims (DWC)	Ca. Infections (CDC)	Ratio
Pre-Presumption	3,943 (through 5/14)	60,614 (through 5/7)	6.5%
Presumption Applies	10,828 (5/14 – 7/8)	172,043 (5/8 – 7/1)	6.3%
Initial Post Presumption	7,850 (7/9 – 7/23)	124,221 (7/2 – 7/16)	6.3%
Total	22,621 (through 7/23)	356,878 (through 7/16)	6.3%

Note: Approximately 83% of California Infections (CDC 8/2/20) are of the working age population. If infections, hospitalizations and deaths are adjusted to the working age level and it is assumed that 50% of workers with mild symptoms will not file a workers' compensation claim, than the ratio of working age infections to workers' compensation claims through late July is approximately 14%.



COVID-19 Crisis

Projection of 1/1/21 – 8/31/21 Policy Period COVID-19 Claim Cost AY 2020 Projected COVID-19 Claim Costs - Staff Preliminary Analysis

(1) AY 2020 Statewide Death Claims Working Age Population:	7,800
(2) AY 2020 Statewide Hospitalizations (ex deaths) Working Age Population:	41,200
(3) WC Death and Hospitalization Claim Conversion Factor:	14%
(4) AY 2020 Estimated WC Death Claims: (1) x (3)	1,100
(5) AY 2020 Estimated WC Hospitalization Claims: (2) x (3)	5,750
(6) AY 2020 Estimated WC Mild Claims:	30,900
(7) AY 2020 Average COVID-19 Loss & LAE Severity:	\$33,700
(8) Statewide AY 2020 COVID-19 Loss & LAE: {(4) + (5) + (6)} x (7)	\$1.3 bb.
(9) Insured Market Share of COVID-19 Claims:	63%
(10) Projected AY 2020 Insured Market COVID-19 Loss & LAE: (8) x (9)	\$0.8 bb.



Estimate AY 2020 Statewide COVID-19 Deaths

- Projected statewide deaths up to Nov 1 based on the latest published projections from IHME and MIT-YYG and extended to end of 2020
 - Applied the forecasted incremental change from Oct to Nov to last two months of 2020 assuming a
 potential winter wave
- Adjusted to the working-age population (18-69 years) based on the CDPH age distribution of deaths
- Plan to update the projection if 12/1 projection is published before the rate filing

	7/1/2020	8/1/2020	9/1/2020	10/1/2020	11/1/2020	12/1/2020	12/31/2020
Ca DPH (Actual)	6,090	9,356					
Ave. of MIT-YYG and IHME Projections			12,531	15,158	17,602		
Incremental Monthly Change				2,628	2,444	2,444	2,444
Estimated statewide COVID deaths						20,046	22,490
Estimated COVID deaths for the working-age population (18-69 years)							7,790



Source: CDPH: https://update.covid19.ca.gov/ MIT-YYG projection: https://covid19-projections.com/us-ca IHME projection: https://covid19-projections.com/us-ca

Estimate 2020 Statewide COVID-19 Hospitalizations

- Limited reliable projections for 2020 statewide hospitalizations available
- The projection method used in the WCIRB May Evaluation assumed a continuous downward trend based on the CDC data (COVID-NET), which may not hold based on the current trajectory
- "Wave-based" method to project the total hospitalizations in 2020
 - Based on the cumulative hospitalizations per 100k (as of 7/28) reported by states that passed their first infection wave in April
 or early May
 - MA, MD, CT, NJ and NY
 - Applied the low-end hospitalization rate (172 per 100k) to project statewide hospitalizations
 - Adjusted to the working population (18-69 years) based on the CDC's age distribution of total hospitalizations
- Severe (no ICU) vs. Critical (ICU) hospitalizations in 2020
 - Total hospital cases segregated to Severe and Critical cases based on published sources
 - Approx. 30% of hospitalizations assumed to be Critical

State	Date of peak hospitalizations	Cumulative hospitalizations per 100,000 up to the peak	Cumulative hospitalizations per 100,000 to date (7/28)	Data Source
MA	4/21	58	172	COVID Tracking
MD	5/06	91	205	Project
NJ	4/15	Not reported	240	
СТ	4/22	218	300	
NY	4/13	272	463	
CA	Latest-7/25	70	70	CDC COVID-NET







Estimate Relativity for AY 2021 COVID Claims Compared to AY 2020

- Published Forecasts for COVID-19 in 2021 indicate 2021 is not significantly better or worse than 2020
 - More infection waves beyond 2020 and likely continue until July 2022 based on mathematical modeling
 - Outbreaks likely last 18-24 months and won't halt until >60% of the population is immune based on review of past global pandemics
 - Similar number of hospitalizations in 2021 compared to 2020 not unreasonable (based on a Health Affair article)
 - A worst-case scenario analysis in UK by the UK Academy of Medical Sciences
 - Hospital deaths during Jan/Feb 2021 more than doubled that of spring 2020
 - Yet no study accounted for the potential impact of a vaccine or existing/new treatments
- National and local public health experts anticipate repeated waves in the future



Published Information on Improved Treatments and Potential Vaccines

- Available Treatments For COVID-19
 - Dexamethasone (an anti-inflammatory steroid recommended for severe COVID infections)
 - Prelim report showed mortality reduced by 12% among ICU patients
 - Remdesivir (FDA approved for hospitalized patients)
 - Shown to reduce time to recovery by 4 days (15 vs. 11 days)
 - Convalescent plasma (FDA approved for severe or life threatening COVID-19)
 - Prone positioning reduces need for ventilators by 46%
- Treatments under clinical trial investigation (about 1,900 on-going trials)
 - Inhaled beta interferon: a U.K. trial showed a 80% mortality reduction among 100 hospitalized patients
 - Plasma-based therapy
- Potential vaccines
 - An effective vaccine by early 2021 highly likely
 - > 140 potential COVID vaccines in various stages of development (WHO)
 - A study on 2009 influenza pandemic (H1N1) shows the vaccines prevented about 4% of both deaths and hospitalizations, and 3% of total infections.
- Improved clinical guidelines for treating COVID-19



Projection of 1/1/21 – 8/31/21 Policy Period COVID-19 Claim Cost AY 2021 Projected COVID-19 Claim Costs - Staff Preliminary Analysis

11) Estimated Relativity AY 2021 to AY 2020 COVID-19 Claims:1.012) Judgmental Adjustment for Improved Treatment & Potential Vaccine:25%13) AY 2021 Insured Market COVID-19 Loss & LAE: (10) x (11) x $\{1 - (12)\}$ \$0.6 bb.14) AY 2021 Insured Market Projected Non-COVID-19 Loss & ALAE:\$11.0 bb.15) AY 2021 COVID-19 Adjustment Factor: (13) / (14)**5.5%**



Projection of 1/1/21 – 8/31/21 Policy Period COVID-19 Claim Cost AY 2022 Projected COVID-19 Claim Costs - Staff Preliminary Analysis

16) Estimated Relativity AY 2022 to AY 2020 COVID-19 Claims:	0.5
17) Judgmental Adjustment for Improved Treatment & Potential Vaccine:	33%
18) AY 2022 Insured Market COVID-19 Loss & LAE: (10) x (16) x {1 - (17)}	\$0.27 bb.
19) AY 2022 Insured Market Projected Non-COVID-19 Loss & ALAE:	\$11.8 bb.
20) AY 2022 COVID-19 Adjustment Factor: (18) / (19)	2.3%
21) 1/1/21-8/31/21 Policy Period COVID-19 Adjustment Factor	4.4%
{(15) x 67%} + {(20) x 33%}	



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Impact of the Economic Slowdown on Pure Premium Rate Indications



Pure Premium Rate Indications Impact of the Economic Slowdown on

Impact of the Economic Slowdown on Pure Premium Rate Indications

- The magnitude of the current economic changes is unprecedented
 - All industries have been affected
 - The retail and hospitality sectors have been hardest hit
 - Changes in the industrial mix can distort indications
- For pure premium ratemaking, changes due solely to changing industrial mix should be excluded from projections
- WCIRB staff has estimated impacts of changing industrial mix and other factors for:
 - Average Wage
 - Claim Frequency
 - Claim Severity
 - Pure Premium



Average Wage Forecasts

- Current forecasts of average wage changes are from March 2020 UCLA and April 2020 Department of Finance
 - (Average wage forecast is not included in the June 2020 UCLA forecast)
- The averages of these wage forecasts are:

2020	2021	2022
1.5%	2.6%	3.8%

- WCIRB has developed two estimates of the impact of changing industrial mix on wage changes
 - 1) Based on BLS OES data through June 2020
 - 2) Based on BLS QCEW wage data through 2019 and UCLA employment forecasts



Industrial Mix Impact on Average Wage – OES Method

- This estimate is a reasonableness check of the QCEW/UCLA Method
 - This data set excludes agricultural and government employees
 - Forecasts are not available





Industrial Mix Impact on Average Wage – QCEW/UCLA Method

- This estimate uses observed industrial wage relativities from QCEW data through 2019
- These relativities are extended into the future with industrial mix determined by UCLA forecasts





1/1/2021 Filing – Wage/Exposure Trend Considerations

- Issues for 2020 may not significantly impact exposure on 2021 policies
 - Rapid economic downturn resulting in return premiums
 - Employees temporarily assigned to clerical
 - Employees furloughed but paid
- Economic difficulties likely to continue into 2021
 - UCLA June 2020 forecast did not include wage variable
- Impact of mix shifts
 - Wage variable is not class-mix adjusted ("intra-class")
 - Impact of loss of lower wage employment on average wage
- Potential Adjustments
 - Current wage forecasts do not fully reflect the economic impact of the pandemic
 - Industrial mix adjustments that more fully reflect the pandemic (June 2020 UCLA) not linked to current forecasts
 - WCIRB has investigated data from prior recessions to help inform the average wage change selection



Comparison of Recession Year Wage Forecasts





Source: UCLA Anderson School of Business 2008-2009 recession assumed to start in 1Q 2008 2020 recession assumed to start in 2Q 2020

Change in Average and Median Wage during Great Recession







Average Wage Change Forecast – Staff Recommendation

• AY 2020 Reasonable Range

Min	Staff Recommendation	Max
0.5%	0.7%	1.5%
Observed during the prior recession	Current forecast adjusted for 0.8% average difference between mean and median wage changes during the prior recession	Current forecast Minimal impact of industrial mix Does not fully reflect the scope of the recession

- AY 2021 and 2022 forecasts are unadjusted
 - Economic growth is forecast for both years, so recession adjustments are inappropriate
 - Contemporaneous employment forecasts were not materially impacted by industrial mix


1/1/2021 Filing – Frequency Trend Considerations (Excluding COVID-19 Claims)

Frequency Issue	Potential Impact on AY 2020	Potential Impact on 1/1/21 Projection
Economic Changes	Very High	High
Post-Termination Claims	High	Low
Other CT Claims	High	Medium
Assignments to Clerical / "Stay-at-Home" Period	High	Low
Furloughed but Paid Employees	Medium	Low
Shifts in Classification Mix	High	Low



WCIRB Claim Frequency Projection

- The WCIRB frequency model predicts frequency changes that are adjusted for changing industrial mix
 - No separate adjustment is required
- Model predicted frequency changes are dependent on changes economic conditions
 - Economic Variables: directly measure forecast economic changes
 - Cumulative Injury Index: has shown correlation with the economy during prior recessions
- The 2020 change in the economic variables is by far the largest of the series



Change in Economic Variables

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Economic Variable Adjustments

- The economic variables are a principle component decomposition of log changes in aggregate employment and the unemployment rate
- Given the extreme value of the 2020 economic variable, alternate specifications were investigated
 - These included point differences in the unemployment rate, changes in employment rate, and changes in the number of unemployed workers
 - All of these alternatives caused one or more model variable to be insignificant
- Explicit caps on the value of the economic variables were also tested for improved model fit
 - An improved fit would imply that at some level economic changes are no longer predictive of frequency
- All caps of the economic variables worsened model fit

Сар	0.10	0.15	0.20	0.25	0.30	0.35	0.40	Max Obs 0.4266
# capped (out of 58)	30	17	8	6	3	1	1	0
R-Squared	0.527	0.538	0.550	0.559	0.565	0.565	0.566	0.566
Reduction	-6.8%	-4.9%	-2.9%	-1.1%	-0.2%	-0.1%	0.0%	0.0%
p-value of Econ Vars	0.131	0.079	0.046	0.030	0.023	0.023	0.022	0.022



Cumulative Injury Index

- Changes in the cumulative injury index are the most predictive element of the model
- No change in the cumulative injury index is currently assumed in the model
 - Past investigations of proxies and time series models were unsuccessful
 - Modeling will be revisited using transactional indemnity data
- The cumulative injury index increased significantly during previous recessions
- Staff investigated model sensitivity to assumed index changes from prior recessions (to represent AY 2020) and recoveries (to represent AY 2021)

Assumed Change in Cumulative Injury Index			Frequency Change			
AY	None	Latest Recession	Two Recession Average	None	Latest Recession	Two Recession Average
2020	0.000	0.186	0.109	-11.1%	-3.6%	-6.8%
2021	0.000	0.022	-0.004	0.6%	1.6%	0.5%
2022	0.000	0.000	0.000	0.0%	0.0%	0.0%

- Staff and the ARWG agree reflecting changes in the index is appropriate
- Staff recommends using a two recession average



Change in Frequency Due to Industrial Mix





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Claim Severity – Impact of Shifting Industrial Mix

- WCIRB has developed estimates of changes in claim frequency due to industrial mix
- Historically these impacts have been modest
- Estimates are based on USR data, where available
- For future years, historic industry severity relativities are used and count distributions are adjusted using forecasts of employment changes
 - This method implicitly assumes that industry frequency and severity relativities will continue
- These adjustments would be applied to historical data used to select intra-class severity trends



Change in Severity Due to Industrial Mix





Impact of Shifting Industrial Mix on Pure Premium

- WCIRB has developed estimates of changes in total pure premium rate due to industrial mix
- Approved pure premium rates are used through 2020; proposed class relativities are used for 2021
- Exposure distributions are based on USR data, where available
- For future years, exposure distributions are adjusted using forecast employment changes







3/31/2020 Experience – Review of Methodologies



Updated Preliminary Summary of 3/31/2020 Experience

- Approximately 100% of market reflected
- Methodologies consistent with 1/1/2020 Filing
- Experience and projections are substantially pre-COVID-19
- Frequency, severity, and wage trends are based on recommendations at April 2, 2020 meeting
- Projected 1/1/2021 to 8/31/2021 policy period loss ratio updated for 3/31/2020 experience (pre-COVID-19): 0.571
- ~1 point decrease from projection based on 12/31/2019 experience (0.584)
 - Approx. -0.4 points from loss development emergence
 - Approx. -1 points from extending trends to 1/1/2021 to 8/31/2021 policy period
 - Small increase from updated frequency trends
 - Small increase from updated indemnity wage on-level regression model

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Cumulative Incurred Development from 12 to 108 Months





Cumulative Paid Development from 12 to 108 Months





Cumulative Incurred Development from 108 to 228 Months





Cumulative Paid Development from 108 to 228 Months

As of March 31, 2020





3/31/2020 Experience - Review of Methodologies

Cumulative Incurred Development from 228 to 360 Months





Cumulative Paid Development from 228 to 360 Months

As of March 31, 2020





Review of Methodologies

3/31/2020 Experience -

Projected Ultimate Indemnity Loss Ratios (Exhibit 3.1)





Projected Ultimate Medical Loss Ratios (Exhibit 3.2)

As of March 31, 2020





Note: All loss ratios are adjusted to the loss development methodology reflected in the 8/4/2020 Agenda and may not be comparable to the actual loss ratios projected at that time. Source: WCIRB aggregate financial data

Alternative Loss Development Methodologies (Item AC20-08-03) Incurred Methods

- Unadjusted Incurred Projections
 - Best with stable case reserve levels and incurred patterns
 - Can be distorted by changing reserve levels
 - ★ Incurred development more volatile and cyclical than paid development
 - Performed poorly during transition periods
 - Greater variability across insurers than paid method
 - ★ Difficult to impute reform adjustments
 - Treatment of MCCP in medical reserves unknown
 - ★ Incurred development decreased over last several years but has turned around recently



Alternative Loss Development Methodologies (Item AC20-08-03) Incurred Methods

- Incurred Adjusted for Changes in Case Reserve Levels
 - Best with clear evidence of changing case reserve levels
 - Unclear how to impute reform impacts
 - Recent updates reduced reliance on assumptions and improved accuracy of adjustment
 - ★ Method can be very volatile with constantly shifting reserve levels (3-year average is used)
 - ★ Current projection not significantly different from unadjusted incurred projections
- Insurer Mix-Adjusted Incurred
 - Best with clear evidence of shifting market shares impacting incurred patterns
 - Issues with lack of transparency and application of statewide method to individual insurer experience
 - ★ Current projection slightly lower than unadjusted incurred projection



Alternative Loss Development Methodologies (Item AC20-08-03) Paid Methods

- Unadjusted Paid Projections
 - Best with stable payment patterns
 - Can be distorted by changing settlement rates or reforms
 - Generally outperformed unadjusted incurred during transition periods
 - Less variability in paid patterns across insurers than in incurred patterns
 - ★ Recent changes in paid development likely related to reforms and claim settlement changes
- Reform-Adjusted Paid
 - Best with clear evidence of reform impact on payment patterns
 - SB 1160 adjustments reflect impact of liens on medical development patterns
 - Adjustment for pharmaceutical cost changes restate medical development to 2018 pharmaceutical cost level
 - Current projection consistent with unadjusted paid projection but more accurately reflects development by period
- Claim Settlement Rate-Adjusted Paid
 - Best with clear evidence of changes in claim settlement rates affecting loss development
 - ★ Improved projection during periods of significant settlement rate change
 - Primary assumptions of method reasonable based on recent review
 - ★ Claim settlement rates have leveled in recent AYs but continue to increase for older years



Alternative Loss Development Methodologies (Item AC20-08-03) Paid Methods

- Insurer Mix-Adjusted Paid
 - Best with clear evidence of shifting market shares impacting paid patterns
 - Issues with lack of transparency and application of statewide method to individual insurer experience
 - ★ Current projection somewhat lower than unadjusted paid projection
- Bornhuetter-Ferguson (BF) Adjusted Paid
 - Best when early loss development is highly leveraged and volatile
 - Requires assumptions of trend and on-leveling in expected loss ratio projection
 - ★ Reviewed in 2016 and found to be generally less accurate than chain-ladder method historically
 - ★ Current projection generally consistent with comparable chain-ladder projection

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Ultimate Indemnity Claim Settlement Ratios (Exhibit 11.2)

As of March 31, 2020



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Review of Methodologies

3/31/2020 Experience

Incremental Indemnity Claim Settlement Ratios (Exhibit 11.3)

As of March 31, 2020



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1/1/2021 Filing – Loss Development Considerations

- March 31, 2020 experience emerging consistent with prior quarters and projections
 - Stay-at-home orders did not begin until late March
 - Services performed in late March typically not paid until subsequent quarters
- Experience for the remainder of 2020 likely distorted by stay-at-home period and other COVID-19 issues
- Post-3/31/20 loss development for claims open in 2020 likely significantly impacted



Projected Indemnity On-Level Loss Ratios under Alternative Development Methods

As of March 31, 2020





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Projected Medical On-Level Loss Ratios under Alternative Development Methods





Review of Medical Fee Schedule Changes

- At 12/5/19 meeting, the Committee recommended staff review updates to OMFS for any significant changes impacting medical costs
- Initial review of fee schedule updates presented at 6/12/20 meeting
- Staff has conducted further review of fee schedule updates published by DWC in 2020
 - Some updates are as a result of COVID-19 pandemic
- Staff compared change in average medical cost after updating fee schedule using 2019 mix of services
- In general, no unusual changes significantly impacting medical severities have been discovered

Review of Medical Fee Schedule Changes w/ Impact on Medical Severities Greater than 0.1%

Fee Schedule	Effective Date	Update Type	Impact on Medical Services
Inpatient	11/1/2019	Regular inflation update	0.2%
Physician	1/1/2020	Regular inflation update	1.0%
Outpatient	3/1/2020	Regular inflation update	1.2%



Historical Changes in Indemnity Claim Frequency (Exhibit 12)

As of March 31, 2020





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Severity Projections – Potential Claim Mix Shifts





Source: WCIRB aggregate financial data, and 2018 report on CT claims *Estimated based on incurred severity relativity to all indemnity claims at 10th report level

Potential Annualized Impact of Increased CT Claims on Severity Trend



Projected Changes in On-Level Indemnity Severity (Exhibit 6.2)

As of March 31, 2020



8/4/2020 Agenda Selected: 0%



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Projected Changes in On-Level Medical Severity (Exhibit 6.4)

As of March 31, 2020



Annual Exponential Trend Based on:

1990 to 2019 (Incl. MCCP): 5.5%

2005 to 2019: 1.6%

2015 to 2019: -0.1%

8/4/2020 Agenda Selected: 1.5%

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1/1/2021 Filing – Severity Trend Considerations (Excluding COVID-19 Claims)

Severity Issue	Potential Impact on AY 2020	Potential Impact on 1/1/21 Projection
"Stay-at-Home" Period – Long-term impact of medical and claim settlement delays	Medium	Low
Post-Termination Claims	Medium	Low
Other CT Claims	High	Medium
Shifts in Classification Mix	High	Low
Indemnity Utilization (TD duration, PD ratings)	High	Medium
Medical Utilization (Mix of services, telehealth, etc.)	High	Medium


06

Impact of Claim Settlement Rate Changes on ALAE Development



Impact of Claim Settlement Rate Changes on ALAE Development

- Claim settlement rates have accelerated sharply for the last several years
- In 1/1/2019 Filing Decision, CDI recommended studying impact on ALAE development
- 2019 WCIRB study showed correlation between settlement rate change and change in later period paid ALAE development
- Adjustment reflected in 1/1/2020 Filing
 - Applied to cumulative paid ALAE development
 - Only applied during periods of significant claim settlement rate change (>1.5 points)
 - Based on historical linear relationship between (a) claim settlement rate change and (b) difference in actual cumulative paid ALAE development from latest CY projection
 - Tempered to 40% of full impact given lack of precision and relatively modest R-squared



Comparison of Claim Settlement Rate Change to Future Period Paid ALAE Development





Impact of Claim Settlement Rate Changes on ALAE Development

Challenges with Current Adjustment Approach

- Current adjustment is based on one-year change in settlement rate compared to cumulative development patterns
- Adjustment does not work well when settlement rates do not change consistently over time or within a CY
 - For example, 2018 settlement rate at 27 months is comparable to 2017 but 2.9 points higher than 2016
 - 2017 settlement rate at 39 months is 1.7 points higher than 2016
 - 2018 paid ALAE development is likely impacted by these settlement rate changes at later periods
- Staff developed refinement to approach to include multiple periods and age-to-age ALAE development



Adjustment to ALAE Development based on 1% of Settlement Rate Change (Table 2)

Age	Full Cumulative Adjustment	Full Age-to-Age Adjustment	40% Tempered Cumulative Adjustment	40% Tempered Age-to-Age Adjustment
75	-0.9%	-0.9%	-0.4%	-0.4%
63	-1.6%	-0.7%	-0.6%	-0.2%
51	-1.8%	-0.2%	-0.7%	-0.1%
39	-2.6%	-0.8%	-1.0%	-0.3%
27	-2.8%	-0.2%	-1.1%	-0.1%
15	-6.1%	-3.3%	-2.4%	-1.3%



Application of Full Model Age-to-Age ALAE Adjustment to March 31, 2020 Experience (Table 3)

AY (Age)	(1) Settlement Rate Point Change	(2) Unadjusted Age-to-Age Factor	(3) Unadjusted Age-to-Ult. Factor	(4) Age-to-Age Adjustment	(5) Adjusted Age-to-Age Factor	(6) Adjusted Age-to-Ult. Factor	(7) Impact of Adjustment
2014 (75)	0.8	1.049	1.369	N/A	1.049	1.369	0.0%
2015 (63)	1.5	1.073	1.468	-0.7%	1.062	1.454	-1.0%
2016 (51)	1.6	1.113	1.633	-0.2%	1.108	1.611	-1.3%
2017 (39)	1.7	1.201	1.962	-0.8%	1.184	1.908	-2.7%
2018 (27)	0.0	1.428	2.801	N/A	1.428	2.725	-2.7%
2019 (15)	0.1	2.601	7.285	N/A	2.601	7.087	-2.7%

(4) From Table 2 if (1) is at least 1.5 points
(5) = [(1) x (4) + 1.0] x (2)
(7) = (6) / (3)



07

1/1/2021 Filing – Loss Adjustment Expense Experience Review



Adjustments to ULAE

- Changes to 2015 Expense Call to collect:
 - Negative "service fee"-type adjustments to CW ULAE
 - Losses on deductible policies or handled by TPA in which associated ULAE not in reported CW amounts
 - Various CW amounts consistent with IEE
 - ULAE for 2015 and forward adjusted for ratemaking using this information
 - ULAE for 2013 & 2014 partially adjusted based on information provided by several large national insurers
- Changes to 2017 Expense Call to collect:
 - CW indemnity claim counts open as of the 12/31 of the prior calendar year
 - ULAE for 2016 and forward apportioned to CA based on open indemnity claim counts



Computation of Adjusted ULAE for CA for 2016 and Forward

1.	CW ULAE Adjusted For Negatives	=	[CW Paid ULAE] + [Amount of Negative ULAE Adjustment]
2.	Adjusted CW Losses	=	[CW Paid Losses] – [Loss for Claims not in ULAE from Deduct. Policies] – [Loss for Claims not in ULAE from Non-Deduct. Policies]
3.	Adjusted CW ULAE Ratio	=	[CW ULAE Adjusted for Negatives] [Adjusted CW Losses]
4.	Adjusted CW Paid ULAE	=	[Adjusted CW ULAE Ratio] x [CW Gross Paid Losses]
5.	Adjusted CA Paid ULAE	=	[Adjusted CW Paid ULAE] x [CA Open Indemnity Claim Counts] [CW Open Indemnity Claim Counts]



Ratios of Paid ULAE to Paid Losses (Exhibit 1)

As of December 31, 2019





Paid ULAE per Open Indemnity Claim – Private Insurers (Exhibit 3.5)

As of December 31, 2019





Source: WCIRB aggregate financial data. Projections based on applying California average annual wage level changes based on UCLA and CA Department of Finance Forecasts to the paid ULAE per open claim from 2018 and 2019.

ULAE Projection Methodology Open Indemnity Claim-based Projection

- Open Indemnity Claims at Beginning of Calendar Year
 - Projected using WCIRB frequency forecasts and recent reporting and closure patterns
 - Frequency forecasts tied to WCIRB frequency model
- Calendar Year Paid ULAE per Open Indemnity Claim
 - Data based on private insurers only
 - Future values projected using selected wage level changes (Item AC20-06-01, Exhibit 5.1)
 - Changes in historical ULAE severities not used until sufficient data based on the new approach is available
- Projected 1/1/2021 to 8/31/2021 Policy Period ULAE
 - Trend to future CYs based on average of CYs 2018 & 2019
 - (# of open indemnity claims) X (paid ULAE per open indemnity claim)
 - Paid ULAE per open claim projected out 3 years to approx. average ULAE payment date on claims



LAE Claim Frequency – Historical Trending Approach





ULAE Projection Methodology Paid Loss-based Projection

- Calendar Year Paid ULAE Ratio to Premium
- Paid Loss Ratio to Premium
 - Projected using paid loss development projections
- Paid ULAE Ratio to Paid Losses
 - Data based on private insurers only
 - (Paid ULAE to premium ratio) / (paid loss to premium ratio)
 - Projected using average of CYs 2018 & 2019
- Projected 1/1/2021 to 8/31/2021 Policy Period ULAE to Loss Ratio
 - Projected ULAE ratio to premium = (projected paid ULAE to paid loss ratio) X (projected paid loss to premium ratio)
 - 67% weight given to CY 2021 and 33% weight given to CY 2022
 - Divide by projected loss ratio



Preliminary Projections of ULAE to Loss

Method	ULAE Projection
January 1, 2020 Pure Premium Rate Filing Projection	14.7%
Average of Open Indemnity Claim-based and Paid Loss-based Projections	13.9%
Paid ULAE per Open Indemnity Claim Applied to the Latest Two Years	14.4%
Paid ULAE to Paid Losses Applied to the Latest Two Years	13.3%
Paid ULAE per Open Indemnity Claim Applied to the Latest Year	13.5%
Paid ULAE to Paid Losses Applied to the Latest Year	12.6%
Paid ULAE per Weighted Open Indemnity Claim Applied to the Latest Two Years	13.9%
Latest Two Calendar Year Paid ULAE to Loss Ratios	14.0%
Latest Calendar Year Paid ULAE to Loss Ratio	13.1%



Paid ALAE Development – Private Insurers (Exhibit 11.1)

As of March 31, 2020

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Cumulative Paid ALAE Development from 12 to 90 Months

As of March 31, 2020



Experience Review

- Loss Adjustment Expense



Change in Incremental Paid ALAE per Open Indemnity Claim – Private Insurers (Exhibit 10)

As of March 31, 2020



Annual Exponential Trend Based on:

2006 to 2020: +3.8%

2015 to 2020: +0.8%



Projected Changes in Ultimate ALAE Severity – Private Insurers (Exhibit 9)

As of March 31, 2020



ALAE Severity Changes Projected from 12 Months Compared to Current

As of March 31, 2020





ALAE Projection Methodology

- Accident Year Ultimate Indemnity Claim Counts
 - Latest year development
 - Projected using WCIRB frequency model forecasts
- Accident Year Ultimate ALAE per Indemnity Claim
 - Data based on private insurers only
 - Latest year development with inverse power curve tail
 - Projected using average of ultimate ALAE per indemnity claim and incremental paid ALAE per open indemnity claim for both long-term and short-term periods
- Projected 1/1/2021 to 8/31/2021 Policy Period ALAE
 - (Projected # of ultimate indemnity claims) X (projected ultimate ALAE per indemnity claim)
 - Projection from latest two accident years
 - Initial projected ratio reduced for lien savings from SB 1160 & AB 1244 not yet significantly reflected in emerging ALAE costs
 - Full impact is 9.6% based on 60% reduction in lien filings
 - Tempered by 50% based on impact already emerging



Adjustment for SB 1160 & AB 1244 Lien Reforms in ALAE

As of March 31, 2020

AY & Age	Estimated % of 168 Mos. ALAE Paid	Estimate Reflected in 1/1/2020 Filing
2018 (27 Months)	41%	
2017 (39 Months)	58%	
Average	49%	25%
Tempered Adjustment to ALAE (9.6% Full)	4.8% (50% tempering)	7.2%



Preliminary Projections of ALAE (Excl. MCCP) to Loss

Method	ALAE Projection
January 1, 2020 Pure Premium Rate Filing Projection	17.2%
Projected Ultimate ALAE per Indemnity Claim – Trend from Latest Two Years	17.0%
Projected Ultimate ALAE per Indemnity Claim – Trend from Latest Two Years Including Refined Adjustment for Claim Settlement and 1.5% Severity Trend	16.3%
Projected Ultimate ALAE per Indemnity Claim – Trend from Latest Year	17.0%
Latest Year Paid ALAE Ratio Development Compared to Losses – Trend from Latest Two Years	17.1%
Latest Year Paid ALAE to Paid Indemnity Development Compared to Losses – Trend from Latest Two Years	16.3%



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1/1/2021 Filing

- Loss Adjustment Expense Experience Review

Paid MCCP Development (Exhibit 18.1)

As of March 31, 2020





- Loss Adjustment Expense Experience Review

1/1/2021 Filing

Calendar Year Paid MCCP per Indemnity Claims Inventory (Exhibit 17)



Annual Exponential Trend Based on:

2009 to 2019: +1.3%



Projected Ultimate MCCP per Indemnity Claim (Exhibit 16)



Agenda Selected MCCP Severity Trend: 0%



Source: WCIRB aggregate financial data and projections. Excludes the cost of IMR and IBR from all years

- Loss Adjustment Expense Experience Review 1/1/2021 Filing

MCCP Projection Methodology

- MCCP methodology based on that for ALAE
 - Statewide data used
 - Development based on latest-year paid MCCP through 99 months and paid medical after 99 months
 - Trend based on average changes in CY MCCP per open claim and ultimate AY MCCP per indemnity claim



Preliminary Projections of MCCP to Loss

Method	MCCP Projection
January 1, 2020 Pure Premium Rate Filing Projection	4.5%
Projected Ultimate MCCP per Indemnity Claim – Trend from Latest Two Years	4.3%
Projected Ultimate MCCP per Indemnity Claim – Trend from Latest Year	4.2%
Projected Ultimate MCCP per Indemnity Claim – Trend Based on CY Paid MCCP per Open Indemnity Claim Applied to Latest Two Years	4.0%
Projected Ultimate MCCP per Indemnity Claim – Trend Based on AY Ultimate MCCP per Open Indemnity Claim Applied to Latest Two Years	4.4%



$\mathbf{08}$

1/1/2021 Filing – Telecommuting Advisory Pure Premium Rate



Telecommuting Classification – Advisory Pure Premium Rate Background

• 1/1/21 Regulatory Filing Proposals

- Class 8871 proposed to apply to clerical telecommuters (50% or more away from employer's location)
- Proposed as "Standard Exception" classification
- Not applicable to classes that specifically include or exclude clerical
- ERP values proposed equal to those of Class 8810 (not used in 2021 x-mods)

• 1/1/21 Proposed 1/1/21 Advisory Pure Premium Rate

- While not a consideration for 1/1/21 Regulatory Filing staff suggested linking advisory pure premium rate of Class 8871 to Class 8810 until experience in new class is available
- Governing and Actuarial Committee members suggested reviewing experience from other states
- Staff agreed to obtain data from other states and review in consideration of 1/1/21 Pure Premium Rate Filing



Exhibit 1

Ratio of Classification 8871 Payroll to Classification 8810 Payroll



Source: NYCIRB through Policy Year 2016 and NCCI states through Policy Year 2017.



Exhibit 2

Loss to Payroll Ratio of 8871 Relative to Class 8810 by Year & State New York and NCCI All State Total





Source: NYCIRB and NCCI.

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Loss to Payroll Ratio of 8871 Relative to Class 8810 by Year & State NCCI 5 Largest States for which 8871 Applies



Source: NCCI.



Exhibit 4

Payroll Distribution by Region in Select California Classifications (Dollars in Billions)

Region	Class 8810	Classes that incl. clerical	Other Classes	Total	Class 8810	Classes that incl. clerical	Other Classes	Total
	F4 F	402.2	227.0	204 5	27.0%	45.00/	20.0%	22.00/
Bay Area	51.5	102.2	227.8	381.5	27.0%	45.0%	30.6%	32.8%
Los Angeles County	55.8	43.8	185.9	285.5	29.3%	19.3%	25.0%	24.6%
Remainder of LA Basin	25.3	25.9	101.2	152.5	13.3%	11.4%	13.6%	13.1%
Out-of-State	19.4	18.5	69.5	107.5	10.2%	8.2%	9.3%	9.2%
San Diego County	16.1	12.6	52.5	81.1	8.5%	5.5%	7.0%	7.0%
Central Coast	10.8	11.9	40.7	63.4	5.7%	5.3%	5.5%	5.5%
Central Valley	5.2	4.2	32.8	42.1	2.7%	1.8%	4.4%	3.6%
Sacramento	4.4	5.2	21.7	31.4	2.3%	2.3%	2.9%	2.7%
Remaining Cal. Regions	1.9	2.5	12.9	17.3	1.0%	1.1%	1.7%	1.5%
Total	190.3	226.8	745.0	1,162.2	100.0%	100.0%	100.0%	100.0%



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Leading Causes of Injury in Select California Classifications



Injury Sub Category	Class 8810	Classes incl. clerical	Other classes
98-Cumulative, NOC	12.3%	6.9%	5.6%
99-Other - Miscellaneous, NOC	9.5%	7.8%	6.1%

Injury Sub Category	Class 8810	Classes incl. clerical	Other classes
60-Strain or Injury By, NOC	7.6%	6.7%	6.8%
97-Strain by - Repetitive Motion	15.8%	11.4%	4.8%
Injury Sub Category	Class 8810	Classes incl. clerical	Other classes
29-Fall - On Same Level	8.1%	7.3%	5.1%
31-Fall, Slip or Trip Injury, NOC	7.8%	7.4%	6.4%

Source : Incurred losses are from Policy Year 2017 Unit Statistical Reporting data, at report level 1.

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