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Presenters:

William Taylor, President & CEO

Thomas Cleary, Senior Vice President & COO

Brent Otto, VP & Chief Actuary

Peter Yoon, Director, Actuarial Research

Today's Agenda

Who is the PCRB?

William Taylor, President & CEO

The Workers Compensation Classification Code System & Updates

Thomas Cleary, Senior Vice President & COO

The "New" Experience Rating Modification Program

Brent Otto, Vice President & Chief Actuary

Peter Yoon, Director, Actuarial Research

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Who is the PCRB?

It is Pennsylvania's trusted, objective provider of actuarially-based information and research, loss costs, and rating plans essential to a healthy workers' compensation system.

Established in 1915 as is an unincorporated, private, non-profit corporation comprised of all insurance companies licensed to transact workers' compensation insurance in Pennsylvania.

Made up of 100+ staff members, with various divisions, specifically: actuarial, data services, classification, policy review, field operations and administration.

It has over 400-member insurance companies.

No public money is used to fund its operations. The operations are funded primarily by membership fees and assessments.

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Our Vision

To be the trusted, essential, and objective resource for workers' compensation data, research, and information in Pennsylvania and Delaware.

Our Mission

To provide objective, accurate, and valuable statistical and actuarially based information, marketplace knowledge, research, and rating plans fundamental to a healthy workers' compensation system.

In support of our mission and to achieve success for our stakeholders, we endeavor to:

- Provide ease of doing business by embracing data and technology
- Provide products and services that anticipate and respond to marketplace conditions
- Identify emerging trends and understand marketplace implications
- Conduct innovative research, provide educational services, and engage in outreach
- Deliver knowledge to empower actionable decisions

Our Values:

We accomplish our mission with a dedicated team and culture that embraces:

Trust. Accountability. Transparency. Innovation. Collaboration. Inclusiveness. Work-life Blend.

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PCRB's Primary Functions

File loss costs & related rating values annually with the PA Insurance Department on behalf of its members

Administer a system of classification risk and underwriting rules

Administer an experience and merit rating system

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PCRB Secondary Functions

- Proof of workers' compensation coverage
- Administer a test audit program
- Develop products and services to support the WC system
  - *Data reporting tools, Supplemental data analysis, Training seminars, etc.*
- Work with legislators, government agencies, members, agents, and labor and employer trade groups on workers' compensation issues.

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PA Workers Compensation Marketplace

PCRB's most recent loss cost, effective 4/1/2023, reflected an overall marketplace reduction, year over year, of -3.3%.

Claims frequency continued to trend downward at -6.2%.

Claims severity increased about a point to 2.9% for Indemnity and 3.4% for Medical.

With a 2021 Combined Ratio of 83%, consumers have benefited from declining ultimate loss costs.

The marketplace remains competitive and heathy for carriers.

To watch: independent contractors; GIG economy; risk management, robotics and AI; medical costs; other.

Recently posted information on the PCRB website highlights many statistics on the PA Workers Compensation marketplace.

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Workers' Compensation Insurance Classification System

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What are “Classifications”?

- Method of grouping similar, although not identical, businesses together for Workers Compensation rating and pricing purposes.
- Identifies experience attributable to those businesses for ratemaking (Loss Cost Values) and Rating (Experience Modification Factors).
- Assigned classification and associated loss cost values go a long way towards determining an employer’s premium.
- Approximately 335 Direct Assignment Classifications and 296 Temporary Staffing Classifications.

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What is the objective of the classification system?

Assign an employer to the one basic classification which best describes each distinct business enterprise - Field of Business.

Classification assignment is not based on individual job duties, occupation or types of employment.

Business operations not described by an existing classification are assigned to the most analogous classification from the standpoint of process and hazard.

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What are basic classifications?

- The basic classification describes the business of the insured.
- All classifications other than the standard exception classification Codes 822, Telecommuting Clerical Employees, 951, Salesperson – Outside, and 953, Clerical Office Employees.
- For example, employers making products out of sheet metal are assigned to basic class Code 454, Sheet Metal Shop. Employers selling jewelry are assigned to basic class Code 920, Jewelry Store

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Recent Updates to the Classification System

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Revised Methodology for Temporary Staffing Classifications

- Temporary staffing classification codes apply to temporary staffing contractors that hire employees and assign those employees to an unrelated business for temporary work assignments varying in duration and are not to be confused with Professional Employer Organizations (PEOs).
- Change eliminated 37 existing temporary staffing classification codes and created 296 new temporary staffing class codes with each direct employment class mapping to one temporary staffing class.
- New temporary staffing classifications are identified by a four-digit number that is 2,000 greater than the associated direct employment classification. i.e., for direct employment classification 323, the corresponding temporary staffing classification is 2323.
- The primary reason for this change is to improve the overall consistency and accuracy of the loss costs between the direct employment class codes and the associated temporary staffing class codes.
- New temporary staffing classifications apply to new or renewal policies effective on or after April 1, 2021.

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Creation of Classification Code 906 – Volunteer Ambulance Corps – Support Staff and Code 989 – Volunteer Fire Company – Support Staff

Act 108 of 2020 defined members of volunteer fire companies/departments and volunteer ambulance corps who do not respond to emergency calls as employees.

Classification study completed of Code 993, Volunteer Ambulance Corps, and Code 994, Volunteer Fire Company, to determine percentage of companies whose members are exclusively engaged in responding to emergency calls versus those who perform support duties.

Study resulted in the creation a Code 906, Volunteer Ambulance Corps – Support Staff, to be a companion class for Code 993 and Code 989, Volunteer Fire Company – Support Staff, to be a companion class for Code 993.

Exposure basis for the companion classes is the same as their corresponding class. i.e., Code 989 will use population as the exposure base and Code 906 will use a single loss cost on a per corps basis.

New classifications apply to new and renewal policies effective on or after April 1, 2022.

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Creation of Classification Code 822 – Telecommuting Clerical Employees

- New classification for employees performing clerical work from their home via the use of email, telephone, video conferencing, and the Internet.
- Created due to telecommuting becoming increasingly more common across many types of business.
- Administered as a standard exception in addition to Code 951, Salesperson – Outside, and Code 953, Clerical Office Employees.
- Clerical employees who interchange between telecommuting and performing clerical work at their employer's location will be classified to Code 822 when more than 50% of their time is spent telecommuting, and to Code 953, Office, when 50% or less of their time is spent telecommuting.
- New classification applies to new or renewal policies effective on or after April 1, 2023.

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Revisions to Pennsylvania Basic Manual Provisions Related to COVID- 19

- Applied an expiration date of June 30, 2023, to prior changes made to Basic Manual provisions related to COVID-19 including the COVID-19 Coronavirus Exception, Changing Classifications, Remuneration Payroll Exclusions and Basis of Premium – Payments to Furloughed Employees During Federal, State and/or Local Emergency Orders, Laws or Regulations Issued Due to COVID-19 (Coronavirus) Pandemic).
- Removed "Payments to Paid Furloughed Employees Due to COVID-19" from the premium algorithm effective June 30, 2023.
- Sunset the use of statistical code 1212 to report payroll for furloughed employees and have it excluded from premium and experience rating calculations as of June 30, 2023.
- Added language to specify all claims reported with Catastrophe Code 12 with accident dates of December 1, 2019, through June 30, 2023, are excluded from experience rating and merit rating.
- The revisions made to the Basic Manual provisions apply to new and renewal policies effective July 1, 2023.

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Experience Rating Plan Update

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Background

- Last major Experience Rating Plan (ERP) change was in 2004.
- Changed from a variable “maximum value” or “split point” to a single maximum value methodology.
- This maximum value is $42,500 for all risk sizes.
- The first $42,500 of every claim is referred to as “primary losses” and count 100% in the mod calculation.
- Added a capping rule that restricts mod change to a maximum swing of +/-25% compared to the previous mod.

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Purpose of Research

The goal of this research is to enhance plan performance through improved predictive accuracy that incentivize workplace safety.

PCRB conducted a comprehensive review of its methodology, which included examining all the components of the current program.

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Current Experience Rating Plan

Single Maximum Value =$42,500
$$\frac{A_p \times C + E \times C \times L + E(1.000 - C)}{E}$$ A_p: Actual Primary Losses E: Expected Losses C: Credibility L: Limitation Charge
Eligibility: Premium developed by audited payroll during the experience period is greater than $10,000
Includes 100% of Medical Only claims
Merit Rating plan is used for employers not qualified for the Experience Rating Plan

Current Plan - Key Findings

- Performance testing showed declines in predictive accuracy since the last major update.
- Variable Maximum Value plan outperform Single Value plan.
- Assigns too little credibility to most risks.
- Inadequately promotes workplace safety.
- Transition between the Merit Rating and ERP plans for small risks can be a large change.

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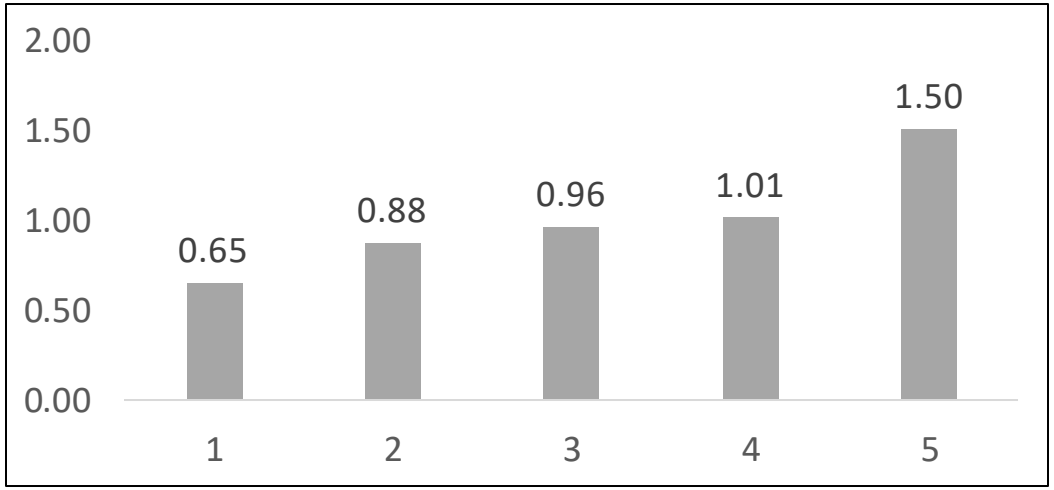
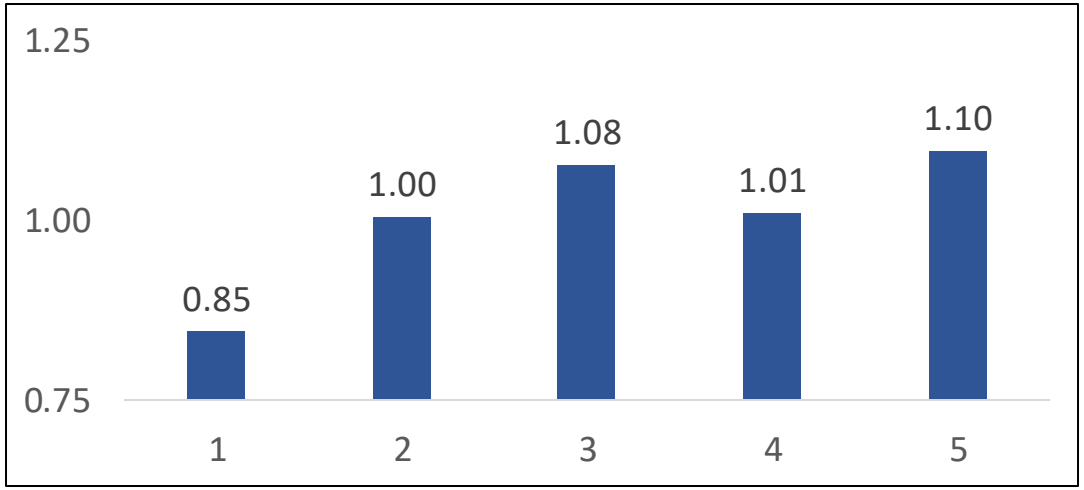
Current ERP Performance Test

2015 - 2017





Note: Expected loss is normalized to ensure overall loss ratios achieve a unity loss ratio

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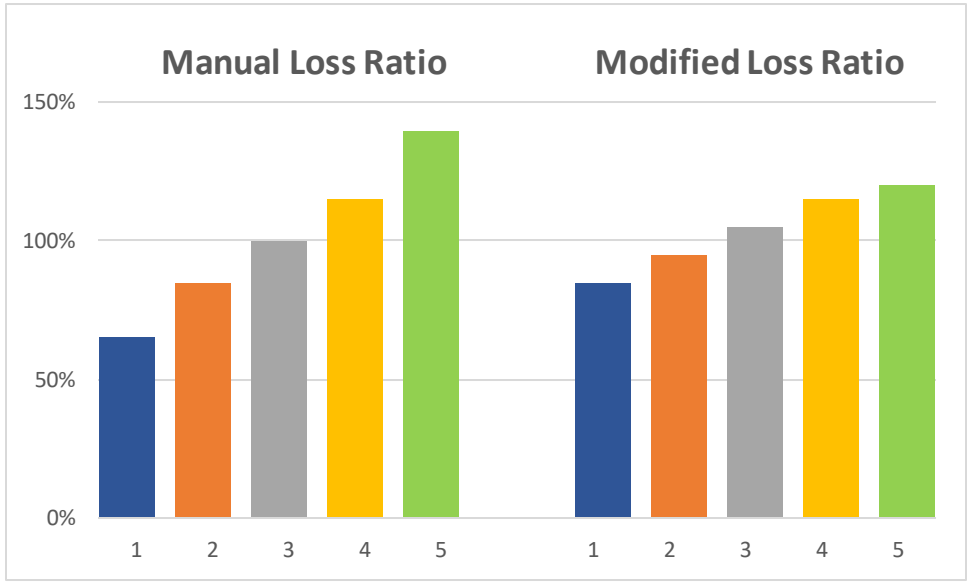
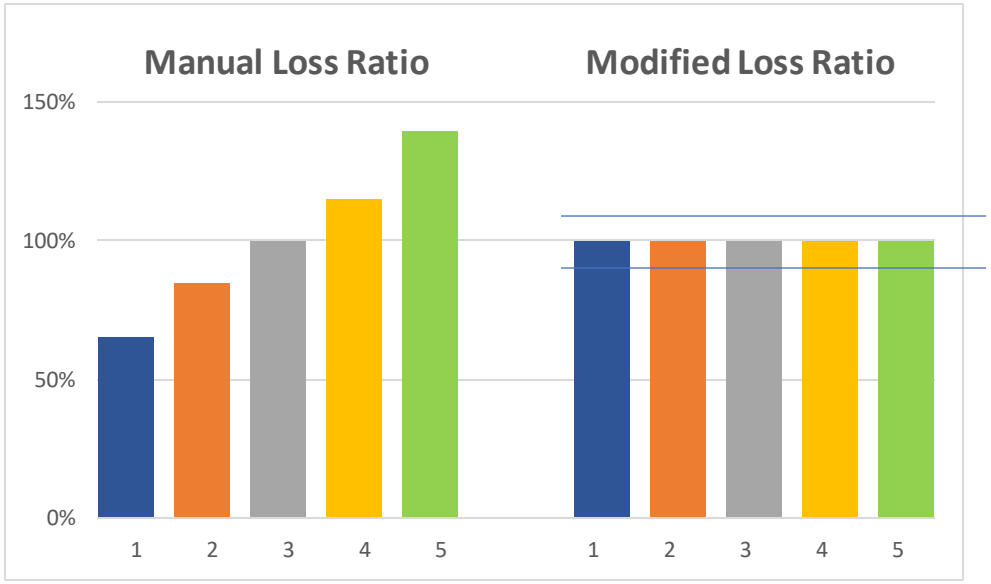
Picture of Ideal Plan Performance

An ideal plan results in the same loss ratios for all quintiles after the application of the mod.

Quintile Test: Current Program



Quintile Test: Ideal Result



Our target deviation from 100% modified loss ratio is +/- 5%.

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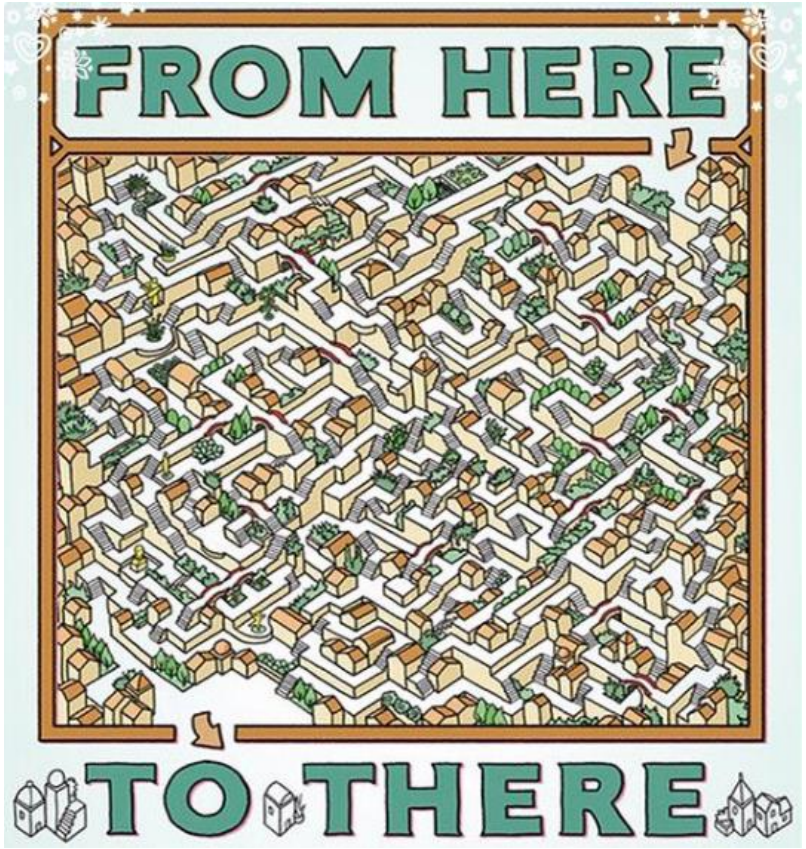
How Do We Get There?

There are four crucial components that influence the accuracy and stability of the experience mod, and these components need to be optimized.

- Credibility
- Maximum Values
- Expected Loss Ranges
- L Factor (Limitation Charge)



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Optimization Process

Simultaneously Optimize Credibility, Split Points, Limit Factor, and Expected Loss Ranges

1. Used data for Policy Years 2015, 2016, 2017 and 2018.
   - Optimization process built using years 2015-2017 and tested using the 2018 holdout year.

2. Risks grouped into cohorts by risk size with groupings also by expected losses ranges for an experience period.

3. Examine each cohort using an array of split points at a given credibility.
   - Compute test statistic to find the maximum dispersion in the manual loss ratio and the minimum dispersion in the modified loss ratio.

   - Test Statistic = $\frac{Variance(Modified\ Loss\ Ratio)}{Variance\ (Manual\ Loss\ Ratio)}$

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Optimal Split Point by Size of Risk – PY 2017

	Cohort = 5,000								Credibility											
Split Point	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
1,000	0.533	0.551	0.569	0.588	0.607	0.627	0.648	0.669	0.691	0.713	0.735	0.759	0.783	0.809	0.834	0.860	0.886	0.913	0.945	0.971
2,000	0.377	0.389	0.411	0.439	0.463	0.480	0.507	0.537	0.565	0.588	0.620	0.650	0.682	0.721	0.757	0.793	0.831	0.869	0.913	0.955
3,000	0.258	0.279	0.299	0.320	0.345	0.369	0.398	0.425	0.456	0.490	0.521	0.561	0.600	0.641	0.682	0.728	0.777	0.829	0.883	0.940
4,000	0.190	0.206	0.225	0.245	0.267	0.291	0.317	0.348	0.379	0.413	0.448	0.487	0.529	0.576	0.625	0.677	0.733	0.793	0.857	0.926
5,000	0.156	0.167	0.179	0.195	0.218	0.239	0.258	0.289	0.314	0.349	0.388	0.428	0.472	0.521	0.573	0.630	0.689	0.760	0.833	0.914
6,000	0.144	0.150	0.158	0.169	0.183	0.200	0.220	0.244	0.270	0.302	0.342	0.377	0.425	0.476	0.531	0.591	0.655	0.729	0.812	0.903
7,000	0.156	0.156	0.160	0.166	0.176	0.189	0.206	0.226	0.251	0.279	0.319	0.351	0.394	0.443	0.505	0.566	0.631	0.703	0.796	0.892
8,000	0.169	0.163	0.161	0.162	0.168	0.176	0.189	0.206	0.227	0.253	0.284	0.320	0.368	0.412	0.473	0.532	0.604	0.686	0.779	0.883
9,000	0.201	0.189	0.180	0.176	0.175	0.161	0.186	0.198	0.215	0.237	0.255	0.299	0.332	0.386	0.442	0.507	0.581	0.666	0.763	0.875
10,000	0.202	0.185	0.173	0.164	0.161	0.161	0.166	0.176	0.190	0.210	0.237	0.270	0.310	0.357	0.414	0.479	0.556	0.645	0.747	0.865
11,000	0.228	0.206	0.191	0.175	0.166	0.164	0.163	0.170	0.180	0.196	0.222	0.251	0.290	0.336	0.392	0.457	0.536	0.627	0.733	0.857
12,000	0.269	0.240	0.216	0.197	0.182	0.173	0.169	0.171	0.177	0.190	0.211	0.238	0.274	0.318	0.372	0.439	0.518	0.611	0.721	0.850
13,000	0.307	0.273	0.243	0.215	0.198	0.184	0.173	0.173	0.174	0.184	0.202	0.226	0.259	0.303	0.356	0.422	0.500	0.596	0.709	0.842
14,000	0.346	0.305	0.269	0.239	0.215	0.196	0.183	0.175	0.174	0.181	0.195	0.216	0.247	0.288	0.341	0.406	0.485	0.581	0.697	0.835
15,000	0.387	0.339	0.299	0.262	0.232	0.209	0.192	0.181	0.176	0.179	0.190	0.208	0.237	0.276	0.327	0.391	0.470	0.568	0.687	0.829
16,000	0.430	0.376	0.328	0.287	0.252	0.224	0.202	0.187	0.178	0.178	0.186	0.201	0.227	0.264	0.314	0.378	0.457	0.555	0.676	0.823
17,000	0.471	0.412	0.359	0.312	0.273	0.240	0.213	0.194	0.182	0.177	0.182	0.196	0.219	0.254	0.302	0.365	0.444	0.544	0.667	0.817
18,000	0.514	0.447	0.388	0.336	0.291	0.254	0.223	0.200	0.185	0.177	0.178	0.190	0.211	0.244	0.291	0.352	0.431	0.532	0.657	0.811
19,000	0.570	0.495	0.429	0.370	0.320	0.278	0.242	0.215	0.195	0.183	0.181	0.189	0.207	0.238	0.282	0.343	0.421	0.522	0.648	0.805
20,000	0.619	0.537	0.467	0.402	0.346	0.298	0.259	0.228	0.204	0.189	0.183	0.187	0.203	0.231	0.274	0.333	0.411	0.512	0.640	0.800
21,000	0.672	0.581	0.503	0.434	0.373	0.319	0.275	0.239	0.212	0.194	0.184	0.186	0.199	0.225	0.266	0.324	0.401	0.502	0.632	0.795
22,000	0.723	0.627	0.543	0.466	0.399	0.342	0.293	0.252	0.221	0.199	0.187	0.186	0.196	0.220	0.259	0.316	0.392	0.493	0.624	0.790
23,000	0.778	0.674	0.582	0.501	0.428	0.365	0.311	0.266	0.231	0.205	0.191	0.186	0.194	0.216	0.253	0.308	0.384	0.486	0.617	0.785
24,000	0.844	0.734	0.635	0.544	0.466	0.396	0.338	0.288	0.249	0.219	0.200	0.192	0.196	0.215	0.250	0.303	0.377	0.478	0.610	0.781
25,000	0.902	0.782	0.674	0.580	0.496	0.421	0.358	0.304	0.261	0.227	0.204	0.194	0.195	0.212	0.245	0.296	0.370	0.470	0.603	0.777
30,000	1.185	1.021	0.880	0.751	0.637	0.539	0.453	0.380	0.316	0.268	0.229	0.205	0.195	0.200	0.224	0.268	0.337	0.437	0.573	0.756
40,000	1.786	1.529	1.307	1.105	0.934	0.781	0.651	0.536	0.439	0.356	0.291	0.240	0.208	0.193	0.199	0.230	0.288	0.384	0.525	0.723
50,000	2.517	2.129	1.797	1.513	1.273	1.061	0.877	0.719	0.584	0.469	0.374	0.307	0.243	0.209	0.197	0.212	0.261	0.348	0.489	0.698
60,000	3.342	2.787	2.344	1.956	1.519	1.352	1.116	0.912	0.739	0.585	0.413	0.370	0.284	0.231	0.203	0.204	0.248	0.322	0.461	0.676
70,000	4.054	3.325	2.736	2.255	1.863	1.530	1.249	1.012	0.811	0.645	0.504	0.386	0.289	0.233	0.199	0.193	0.221	0.293	0.434	0.657
80,000	5.063	4.098	3.336	2.716	2.222	1.817	1.474	1.190	0.950	0.751	0.586	0.445	0.334	0.261	0.210	0.193	0.212	0.283	0.420	0.644
90,000	6.248	4.954	3.967	3.211	2.597	2.102	1.697	1.363	1.088	0.856	0.664	0.507	0.381	0.287	0.223	0.195	0.205	0.269	0.403	0.630
100,000	7.564	5.895	4.656	3.713	2.979	2.395	1.924	1.539	1.222	0.959	0.742	0.565	0.423	0.312	0.237	0.198	0.200	0.259	0.390	0.619
150,000	17.391	12.167	8.817	6.584	5.016	3.873	3.025	2.360	1.837	1.421	1.086	0.816	0.602	0.432	0.307	0.227	0.195	0.230	0.344	0.578
200,000	34.394	20.852	13.878	9.705	7.046	5.248	3.988	3.045	2.332	1.780	1.352	1.008	0.736	0.523	0.364	0.256	0.204	0.217	0.320	0.555
250,000	61.160	31.783	19.196	12.735	8.871	6.411	4.764	3.575	2.711	2.049	1.538	1.143	0.830	0.586	0.404	0.276	0.210	0.212	0.308	0.542
300,000	97.222	43.731	24.400	15.336	10.423	7.367	5.363	3.978	2.980	2.238	1.673	1.239	0.897	0.632	0.432	0.292	0.214	0.209	0.300	0.533
400,000	184.566	65.596	32.684	19.238	12.481	8.542	6.107	4.471	3.317	2.474	1.840	1.349	0.975	0.685	0.466	0.311	0.222	0.206	0.291	0.524
500,000	325.787	89.996	40.059	22.355	14.035	9.529	6.700	4.820	3.546	2.627	1.943	1.419	1.026	0.719	0.487	0.323	0.226	0.198	0.286	0.518

Bottom 5%

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Optimal Split Point by Size of Risk – PY 2017

	Cohort = 40,000	Credibility																		
Split Point	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
1,000	0.783	0.794	0.804	0.811	0.821	0.832	0.842	0.851	0.859	0.872	0.883	0.891	0.902	0.914	0.929	0.939	0.950	0.961	0.975	0.986
2,000	0.692	0.701	0.714	0.728	0.741	0.755	0.769	0.787	0.798	0.814	0.828	0.845	0.861	0.877	0.893	0.911	0.927	0.945	0.962	0.979
3,000	0.625	0.639	0.652	0.673	0.688	0.702	0.718	0.734	0.756	0.774	0.787	0.807	0.828	0.847	0.868	0.886	0.908	0.931	0.954	0.976
4,000	0.577	0.592	0.607	0.625	0.642	0.659	0.676	0.696	0.716	0.736	0.756	0.778	0.800	0.820	0.846	0.867	0.893	0.917	0.944	0.972
5,000	0.519	0.537	0.554	0.574	0.592	0.613	0.633	0.654	0.674	0.694	0.717	0.743	0.767	0.793	0.820	0.846	0.875	0.906	0.935	0.967
6,000	0.481	0.499	0.517	0.536	0.556	0.576	0.598	0.620	0.642	0.666	0.691	0.716	0.743	0.771	0.800	0.830	0.861	0.894	0.928	0.963
7,000	0.448	0.466	0.485	0.505	0.525	0.546	0.569	0.592	0.616	0.641	0.667	0.694	0.722	0.752	0.783	0.815	0.849	0.884	0.921	0.960
8,000	0.418	0.435	0.456	0.476	0.495	0.519	0.541	0.564	0.590	0.616	0.643	0.672	0.702	0.733	0.766	0.800	0.837	0.875	0.914	0.956
9,000	0.391	0.412	0.429	0.450	0.472	0.493	0.517	0.542	0.568	0.594	0.623	0.653	0.684	0.717	0.751	0.787	0.826	0.866	0.908	0.953
10,000	0.373	0.391	0.411	0.431	0.452	0.475	0.498	0.523	0.550	0.577	0.606	0.637	0.669	0.702	0.738	0.776	0.815	0.858	0.902	0.950
11,000	0.353	0.371	0.392	0.413	0.433	0.455	0.480	0.505	0.531	0.560	0.590	0.620	0.654	0.689	0.726	0.764	0.806	0.850	0.897	0.947
12,000	0.351	0.369	0.388	0.408	0.429	0.451	0.475	0.499	0.526	0.554	0.584	0.615	0.648	0.681	0.720	0.760	0.802	0.848	0.896	0.946
13,000	0.327	0.348	0.368	0.386	0.406	0.427	0.451	0.480	0.507	0.536	0.566	0.596	0.631	0.669	0.707	0.749	0.790	0.840	0.890	0.943
14,000	0.303	0.322	0.341	0.362	0.384	0.406	0.431	0.457	0.485	0.513	0.545	0.578	0.615	0.653	0.693	0.736	0.782	0.832	0.883	0.941
15,000	0.292	0.310	0.329	0.351	0.372	0.395	0.420	0.447	0.474	0.504	0.536	0.570	0.603	0.643	0.685	0.728	0.774	0.824	0.879	0.937
16,000	0.277	0.295	0.314	0.335	0.357	0.380	0.405	0.430	0.459	0.490	0.521	0.555	0.593	0.631	0.674	0.719	0.767	0.819	0.875	0.935
17,000	0.271	0.288	0.306	0.326	0.348	0.371	0.395	0.422	0.450	0.480	0.512	0.547	0.584	0.623	0.666	0.711	0.760	0.815	0.872	0.933
18,000	0.270	0.285	0.303	0.322	0.343	0.366	0.390	0.416	0.443	0.473	0.505	0.539	0.577	0.616	0.659	0.706	0.755	0.809	0.867	0.931
19,000	0.265	0.275	0.293	0.316	0.337	0.359	0.379	0.403	0.435	0.464	0.494	0.528	0.566	0.608	0.650	0.696	0.747	0.804	0.864	0.929
20,000	0.236	0.252	0.270	0.289	0.310	0.332	0.356	0.383	0.411	0.443	0.476	0.510	0.548	0.590	0.636	0.687	0.740	0.796	0.859	0.926
21,000	0.223	0.239	0.256	0.275	0.296	0.318	0.342	0.368	0.397	0.428	0.461	0.497	0.536	0.578	0.624	0.674	0.729	0.787	0.853	0.924
22,000	0.212	0.228	0.245	0.264	0.284	0.307	0.332	0.358	0.386	0.417	0.451	0.487	0.527	0.569	0.616	0.667	0.722	0.782	0.849	0.922
23,000	0.211	0.226	0.243	0.262	0.282	0.304	0.327	0.354	0.382	0.413	0.446	0.483	0.518	0.565	0.609	0.663	0.719	0.777	0.846	0.920
24,000	0.204	0.219	0.235	0.253	0.272	0.294	0.318	0.344	0.372	0.402	0.436	0.472	0.512	0.555	0.603	0.654	0.711	0.775	0.842	0.917
25,000	0.202	0.215	0.232	0.249	0.268	0.289	0.313	0.338	0.366	0.397	0.430	0.466	0.506	0.549	0.597	0.649	0.706	0.769	0.839	0.915
30,000	0.203	0.214	0.226	0.241	0.257	0.276	0.298	0.325	0.352	0.378	0.409	0.446	0.487	0.531	0.579	0.632	0.691	0.754	0.828	0.910
40,000	0.286	0.281	0.280	0.282	0.287	0.294	0.305	0.319	0.337	0.358	0.385	0.414	0.449	0.488	0.536	0.588	0.647	0.719	0.796	0.891
50,000	0.315	0.305	0.285	0.280	0.277	0.283	0.284	0.291	0.306	0.325	0.344	0.373	0.405	0.444	0.492	0.546	0.608	0.685	0.772	0.878
60,000	0.430	0.395	0.367	0.347	0.332	0.322	0.318	0.318	0.324	0.334	0.350	0.372	0.400	0.435	0.478	0.530	0.590	0.668	0.757	0.868
70,000	0.605	0.543	0.493	0.452	0.417	0.394	0.378	0.368	0.365	0.364	0.374	0.386	0.407	0.440	0.478	0.526	0.582	0.659	0.748	0.862
80,000	0.791	0.695	0.617	0.556	0.501	0.466	0.434	0.414	0.400	0.392	0.391	0.399	0.414	0.439	0.470	0.518	0.573	0.649	0.737	0.853
90,000	0.961	0.831	0.727	0.635	0.571	0.524	0.480	0.450	0.427	0.411	0.404	0.406	0.415	0.438	0.464	0.506	0.561	0.634	0.727	0.846
100,000	1.221	1.067	0.929	0.804	0.714	0.645	0.586	0.542	0.505	0.476	0.461	0.452	0.453	0.468	0.487	0.521	0.571	0.639	0.724	0.844
150,000	2.734	2.165	1.762	1.464	1.238	1.061	0.921	0.810	0.721	0.650	0.595	0.555	0.527	0.513	0.514	0.529	0.564	0.620	0.701	0.827
200,000	4.618	3.369	2.588	2.060	1.682	1.401	1.185	1.016	0.883	0.778	0.694	0.629	0.582	0.550	0.535	0.537	0.560	0.609	0.686	0.814
250,000	6.923	4.618	3.367	2.583	2.053	1.673	1.391	1.175	1.006	0.874	0.769	0.686	0.624	0.580	0.554	0.547	0.562	0.604	0.677	0.806
300,000	9.492	5.799	4.032	2.998	2.336	1.875	1.539	1.286	1.088	0.939	0.818	0.724	0.651	0.599	0.565	0.552	0.560	0.599	0.673	0.799
400,000	14.420	7.557	5.039	3.630	2.759	2.176	1.760	1.455	1.224	1.045	0.903	0.793	0.706	0.643	0.599	0.575	0.574	0.605	0.673	0.796
500,000	20.889	9.307	5.836	3.958	2.956	2.312	1.858	1.549	1.285	1.101	0.946	0.825	0.731	0.658	0.610	0.581	0.576	0.602	0.668	0.791

Bottom 5%

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Optimal Split Point by Size of Risk – PY 2017

	Cohort = 1M	Credibility																		
Split Point	100%	95%	90%	85%	80%	75%	70%	65%	60%	55%	50%	45%	40%	35%	30%	25%	20%	15%	10%	5%
1,000	0.882	0.888	0.894	0.900	0.905	0.910	0.917	0.923	0.928	0.934	0.940	0.945	0.953	0.957	0.964	0.970	0.973	0.982	0.989	0.993
2,000	0.828	0.835	0.844	0.851	0.859	0.867	0.876	0.883	0.896	0.901	0.912	0.918	0.928	0.936	0.946	0.956	0.962	0.972	0.981	0.990
3,000	0.739	0.750	0.761	0.776	0.785	0.799	0.809	0.821	0.830	0.851	0.860	0.874	0.887	0.898	0.914	0.927	0.941	0.956	0.976	0.985
4,000	0.705	0.717	0.740	0.753	0.765	0.778	0.791	0.804	0.809	0.828	0.838	0.855	0.869	0.885	0.904	0.919	0.931	0.949	0.965	0.983
5,000	0.665	0.698	0.688	0.711	0.735	0.743	0.758	0.775	0.785	0.802	0.824	0.837	0.849	0.869	0.885	0.906	0.921	0.941	0.961	0.980
6,000	0.646	0.660	0.674	0.698	0.695	0.720	0.743	0.753	0.764	0.791	0.808	0.821	0.839	0.858	0.879	0.892	0.914	0.934	0.957	0.977
7,000	0.619	0.634	0.649	0.666	0.681	0.697	0.714	0.732	0.749	0.767	0.786	0.805	0.825	0.848	0.868	0.882	0.908	0.930	0.954	0.975
8,000	0.596	0.611	0.627	0.645	0.661	0.678	0.696	0.715	0.733	0.752	0.771	0.792	0.813	0.834	0.859	0.878	0.899	0.924	0.951	0.974
9,000	0.565	0.581	0.598	0.616	0.634	0.652	0.671	0.691	0.711	0.731	0.752	0.774	0.796	0.819	0.843	0.867	0.891	0.917	0.945	0.972
10,000	0.544	0.561	0.579	0.597	0.616	0.635	0.654	0.674	0.695	0.717	0.739	0.762	0.785	0.809	0.834	0.859	0.886	0.913	0.941	0.970
11,000	0.529	0.571	0.565	0.583	0.602	0.622	0.642	0.663	0.700	0.706	0.742	0.752	0.776	0.801	0.827	0.852	0.880	0.908	0.938	0.968
12,000	0.538	0.555	0.572	0.590	0.609	0.627	0.647	0.667	0.686	0.710	0.731	0.742	0.778	0.801	0.828	0.854	0.880	0.905	0.936	0.967
13,000	0.496	0.514	0.532	0.552	0.571	0.592	0.612	0.634	0.657	0.680	0.704	0.729	0.756	0.782	0.809	0.839	0.875	0.905	0.932	0.965
14,000	0.474	0.492	0.511	0.530	0.551	0.573	0.600	0.617	0.640	0.669	0.690	0.719	0.746	0.771	0.802	0.832	0.861	0.895	0.929	0.964
15,000	0.457	0.476	0.495	0.515	0.536	0.558	0.580	0.603	0.627	0.653	0.678	0.705	0.733	0.761	0.791	0.822	0.854	0.892	0.927	0.962
16,000	0.444	0.462	0.483	0.502	0.524	0.546	0.569	0.592	0.617	0.642	0.668	0.699	0.724	0.754	0.785	0.817	0.851	0.885	0.922	0.961
17,000	0.436	0.456	0.470	0.496	0.512	0.539	0.557	0.586	0.606	0.636	0.662	0.690	0.716	0.749	0.778	0.813	0.846	0.883	0.920	0.959
18,000	0.426	0.445	0.465	0.486	0.507	0.529	0.553	0.577	0.602	0.628	0.655	0.683	0.712	0.743	0.775	0.807	0.841	0.879	0.918	0.958
19,000	0.413	0.433	0.453	0.474	0.495	0.518	0.541	0.566	0.591	0.618	0.645	0.674	0.706	0.736	0.769	0.803	0.839	0.876	0.915	0.957
20,000	0.405	0.424	0.444	0.465	0.487	0.510	0.533	0.558	0.584	0.611	0.638	0.667	0.698	0.730	0.763	0.798	0.835	0.873	0.913	0.955
21,000	0.394	0.414	0.434	0.455	0.477	0.497	0.524	0.549	0.575	0.602	0.631	0.661	0.692	0.723	0.758	0.794	0.830	0.870	0.911	0.954
22,000	0.380	0.400	0.420	0.442	0.464	0.488	0.512	0.537	0.564	0.592	0.620	0.653	0.684	0.717	0.750	0.787	0.825	0.866	0.909	0.953
23,000	0.371	0.392	0.412	0.431	0.454	0.480	0.505	0.530	0.555	0.585	0.614	0.645	0.677	0.709	0.746	0.783	0.822	0.863	0.906	0.952
24,000	0.334	0.355	0.377	0.400	0.424	0.452	0.478	0.505	0.530	0.560	0.591	0.623	0.657	0.693	0.730	0.778	0.812	0.860	0.904	0.951
25,000	0.326	0.347	0.368	0.392	0.416	0.442	0.467	0.494	0.523	0.554	0.584	0.617	0.651	0.687	0.725	0.765	0.808	0.852	0.899	0.950
30,000	0.286	0.308	0.330	0.354	0.378	0.404	0.431	0.459	0.489	0.520	0.552	0.587	0.623	0.661	0.701	0.744	0.789	0.837	0.888	0.943
40,000	0.196	0.218	0.242	0.266	0.292	0.319	0.348	0.379	0.411	0.445	0.481	0.519	0.560	0.605	0.649	0.705	0.750	0.811	0.869	0.932
50,000	0.157	0.177	0.199	0.222	0.247	0.274	0.303	0.327	0.365	0.400	0.437	0.472	0.515	0.564	0.613	0.663	0.721	0.782	0.852	0.922
60,000	0.117	0.138	0.161	0.185	0.211	0.239	0.268	0.300	0.333	0.369	0.407	0.448	0.498	0.540	0.595	0.649	0.705	0.772	0.841	0.918
70,000	0.088	0.108	0.131	0.155	0.181	0.209	0.239	0.271	0.310	0.342	0.381	0.423	0.468	0.520	0.572	0.629	0.690	0.757	0.831	0.913
80,000	0.072	0.092	0.113	0.137	0.162	0.190	0.219	0.251	0.285	0.321	0.361	0.403	0.449	0.498	0.552	0.611	0.675	0.745	0.822	0.908
90,000	0.061	0.097	0.100	0.123	0.165	0.176	0.206	0.251	0.264	0.308	0.348	0.391	0.437	0.487	0.531	0.592	0.658	0.737	0.812	0.901
100,000	0.060	0.077	0.097	0.119	0.144	0.170	0.199	0.231	0.264	0.300	0.339	0.381	0.430	0.479	0.535	0.595	0.658	0.731	0.812	0.901
150,000	0.021	0.022	0.033	0.049	0.071	0.096	0.124	0.156	0.191	0.229	0.279	0.315	0.371	0.425	0.468	0.540	0.614	0.698	0.784	0.885
200,000	0.062	0.029	0.019	0.023	0.036	0.057	0.083	0.113	0.148	0.186	0.228	0.275	0.326	0.381	0.439	0.511	0.586	0.673	0.767	0.874
250,000	0.188	0.098	0.053	0.035	0.035	0.047	0.067	0.093	0.125	0.162	0.203	0.249	0.300	0.357	0.420	0.490	0.568	0.657	0.759	0.871
300,000	0.337	0.187	0.106	0.068	0.054	0.057	0.070	0.093	0.122	0.156	0.196	0.241	0.291	0.348	0.411	0.481	0.560	0.650	0.752	0.867
400,000	0.528	0.292	0.167	0.103	0.074	0.067	0.076	0.094	0.121	0.154	0.193	0.239	0.288	0.345	0.407	0.478	0.558	0.647	0.749	0.866
500,000	0.701	0.385	0.218	0.131	0.089	0.075	0.078	0.094	0.118	0.150	0.188	0.232	0.281	0.338	0.400	0.471	0.552	0.642	0.746	0.865

Bottom 5%

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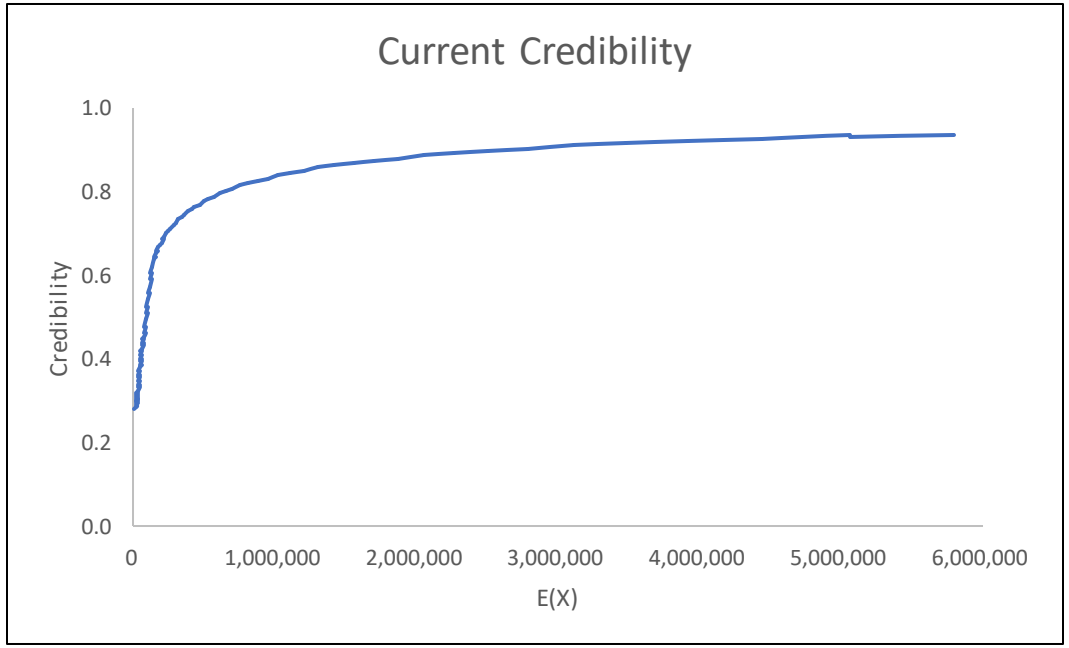
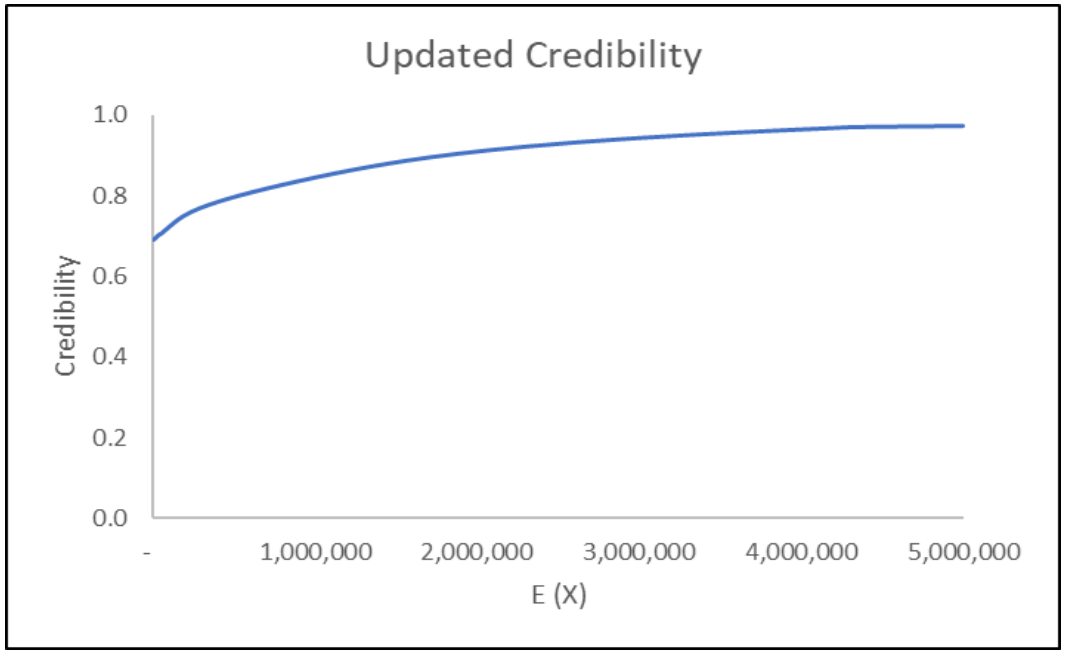
ERP Credibility: Current vs. Revised





Under the current plan, the credibility curve starts at 28.3% and the maximum credibility is 93.8%.

The revised credibility curve starts at around 70% and the maximum credibility is around 97%.

Credibilities and Maximum Values

Expected Losses			
Low	High	Credibility*	Split Point*
-	5,000	0.690	10,000
5,000	11,097	0.692	11,000
11,097	17,683	0.694	13,000
17,683	23,953	0.697	15,000
23,953	29,924	0.699	17,000
29,924	35,614	0.701	19,000
35,614	41,041	0.703	21,000
41,041	55,902	0.706	23,000
55,902	68,958	0.711	25,000
68,958	80,590	0.715	27,000
80,590	91,141	0.718	29,000
91,141	100,920	0.722	31,000
100,920	110,201	0.725	33,000
110,201	119,228	0.728	35,000
119,228	128,218	0.731	37,000
128,218	137,358	0.734	39,000
137,358	146,813	0.737	41,000
146,813	156,724	0.740	43,000
156,724	167,212	0.743	45,000
167,212	178,379	0.746	47,000
178,379	190,306	0.749	49,000
190,306	203,062	0.752	51,000
203,062	216,698	0.755	53,000
216,698	231,254	0.758	55,000
231,254	246,756	0.761	57,000
246,756	263,220	0.764	59,000
263,220	280,654	0.767	61,000
280,654	299,053	0.770	63,000
299,053	318,410	0.773	65,000
318,410	338,707	0.776	67,000
338,707	359,924	0.779	69,000
359,924	382,034	0.782	71,000

Expected Losses			
Low	High	Credibility	Split Point
382,034	405,008	0.785	73,000
405,008	428,814	0.788	75,000
428,814	453,416	0.791	77,000
453,416	478,780	0.794	80,000
478,780	504,867	0.797	83,000
504,867	531,643	0.800	86,000
531,643	559,072	0.803	89,000
559,072	587,119	0.806	92,000
587,119	615,751	0.809	95,000
615,751	644,938	0.812	98,000
644,938	674,652	0.815	102,000
674,652	704,871	0.818	106,000
704,871	735,573	0.821	110,000
735,573	766,742	0.824	114,000
766,742	798,366	0.827	118,000
798,366	830,440	0.830	122,000
830,440	862,961	0.833	126,000
862,961	895,933	0.836	130,000
895,933	929,367	0.839	134,000
929,367	963,278	0.842	138,000
963,278	997,690	0.845	142,000
997,690	1,032,631	0.848	146,000
1,032,631	1,068,138	0.851	150,000
1,068,138	1,104,253	0.854	154,000
1,104,253	1,141,026	0.857	158,000
1,141,026	1,178,516	0.860	162,000
1,178,516	1,216,788	0.863	166,000
1,216,788	1,255,914	0.866	170,000
1,255,914	1,295,976	0.869	174,000
1,295,976	1,337,061	0.872	178,000
1,337,061	1,379,268	0.875	182,000
1,379,268	1,422,700	0.878	186,000

Expected Losses			
Low	High	Credibility	Split Point
1,422,700	1,467,472	0.881	190,000
1,467,472	1,513,704	0.884	194,000
1,513,704	1,561,526	0.887	198,000
1,561,526	1,611,076	0.890	202,000
1,611,076	1,662,502	0.893	206,000
1,662,502	1,715,957	0.896	210,000
1,715,957	1,771,606	0.899	215,000
1,771,606	1,829,621	0.902	220,000
1,829,621	1,890,183	0.905	225,000
1,890,183	1,953,479	0.908	230,000
1,953,479	2,019,709	0.911	235,000
2,019,709	2,089,078	0.914	240,000
2,089,078	2,161,801	0.917	245,000
2,161,801	2,238,101	0.920	250,000
2,238,101	2,318,210	0.923	255,000
2,318,210	2,402,367	0.926	260,000
2,402,367	2,490,821	0.929	265,000
2,490,821	2,583,829	0.932	270,000
2,583,829	2,681,655	0.935	275,000
2,681,655	2,784,572	0.938	280,000
2,784,572	2,892,863	0.941	285,000
2,892,863	3,006,815	0.944	290,000
3,006,815	3,126,727	0.947	295,000
3,126,727	3,252,905	0.950	300,000
3,252,905	3,385,661	0.953	300,000
3,385,661	3,525,316	0.956	300,000
3,525,316	3,672,201	0.959	300,000
3,672,201	3,826,650	0.962	300,000
3,826,650	3,989,009	0.965	300,000
3,989,009	4,159,630	0.968	300,000
4,159,630	4,338,871	0.971	300,000
4,338,871	Above	0.974	300,000

* Preliminary values

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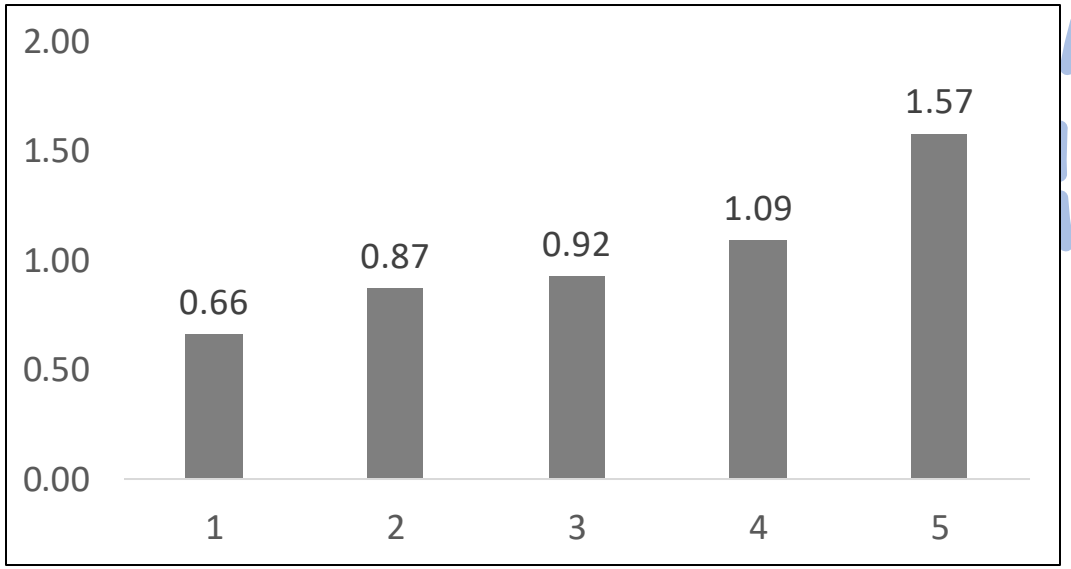
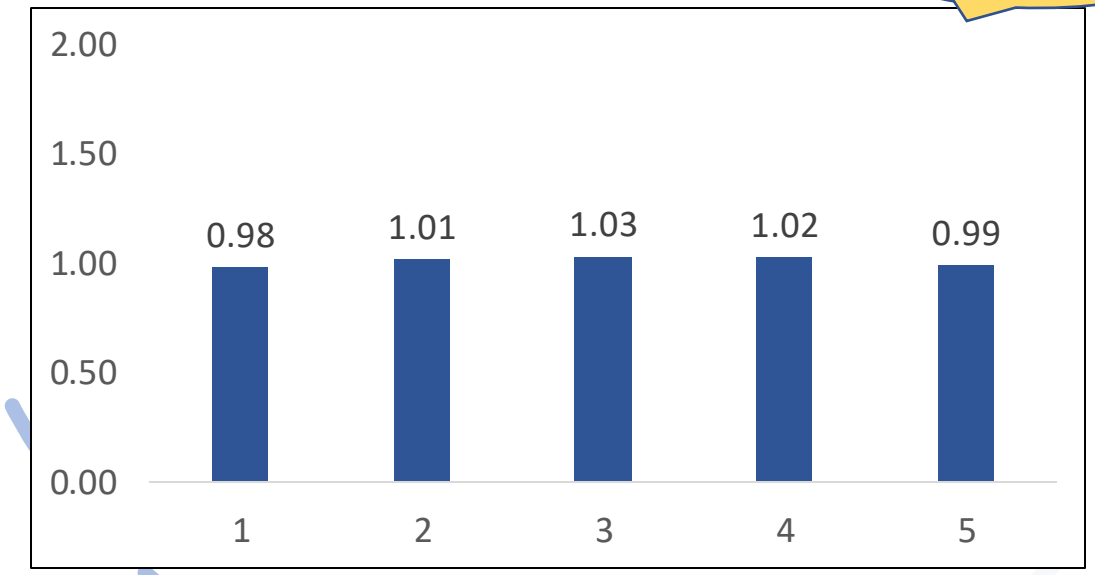
Updated ERP Performance Test

The following lift charts are produced using the optimized elements.

2015 - 2018



Deviation within **+/-3%**



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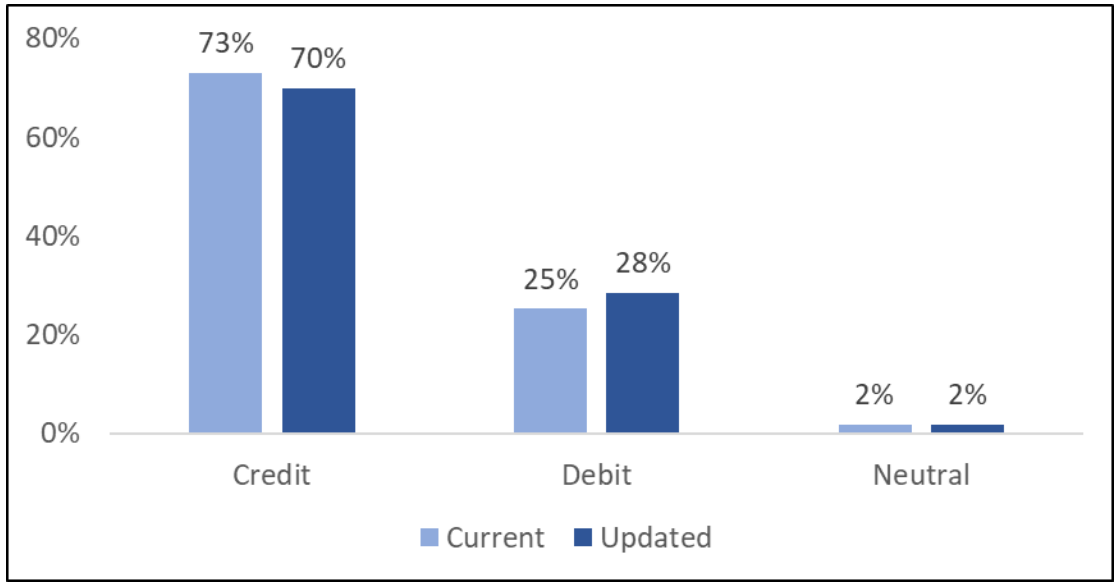
Optimization Results Summary

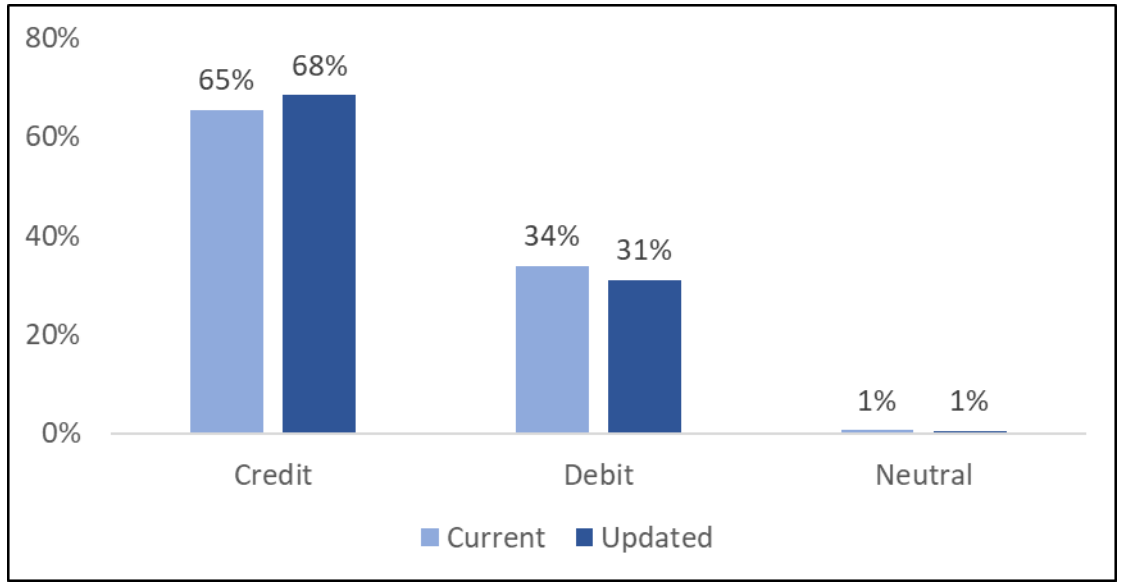
- Smaller risks receive markedly higher credibility.
- Larger risks receive nominally increased credibility.
- Maximum Values for smaller risks are lower.
- Maximum Values for larger risks are higher.
- The efficiency test indicates very good results with a deviation of less than 5% from unity.

Policy Count and Premium Distribution

Policy Count



Premium



* Based on PY 2018 data

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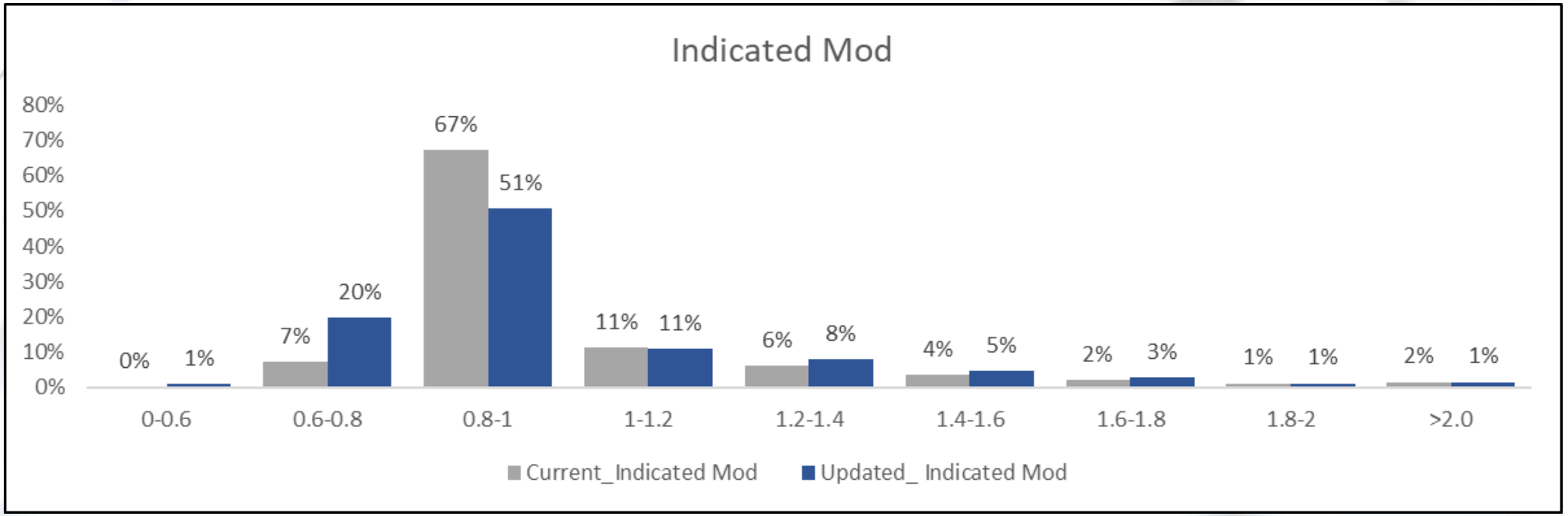
Distribution of Mod



* Based on PY 2018 data

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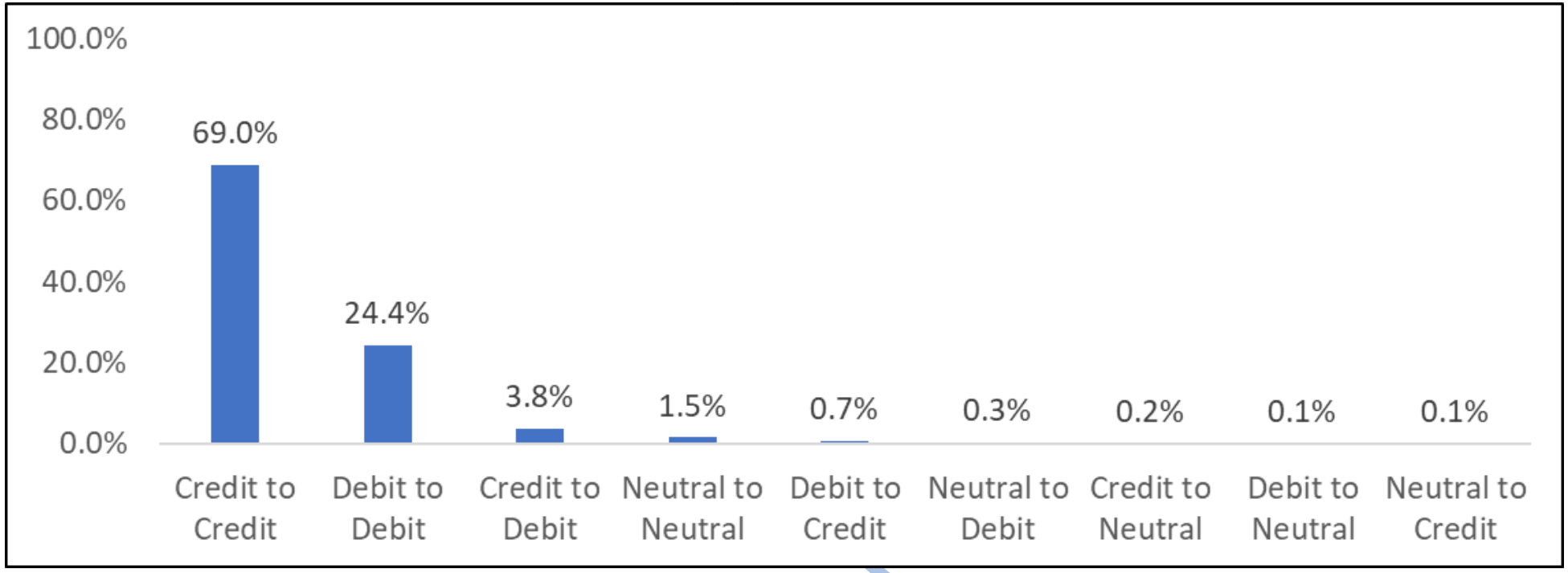
Change in Mod Type



* Based on PY 2018 data

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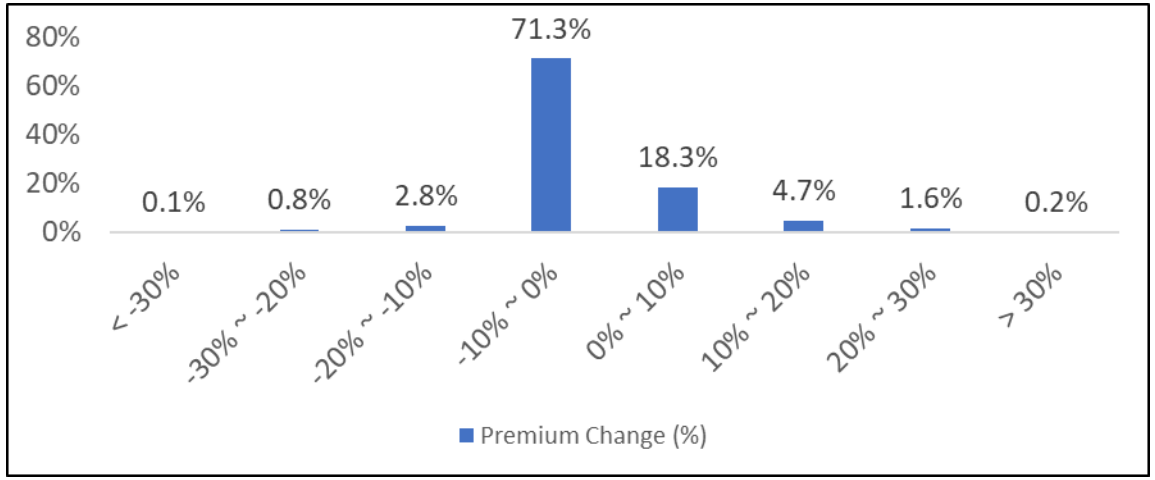
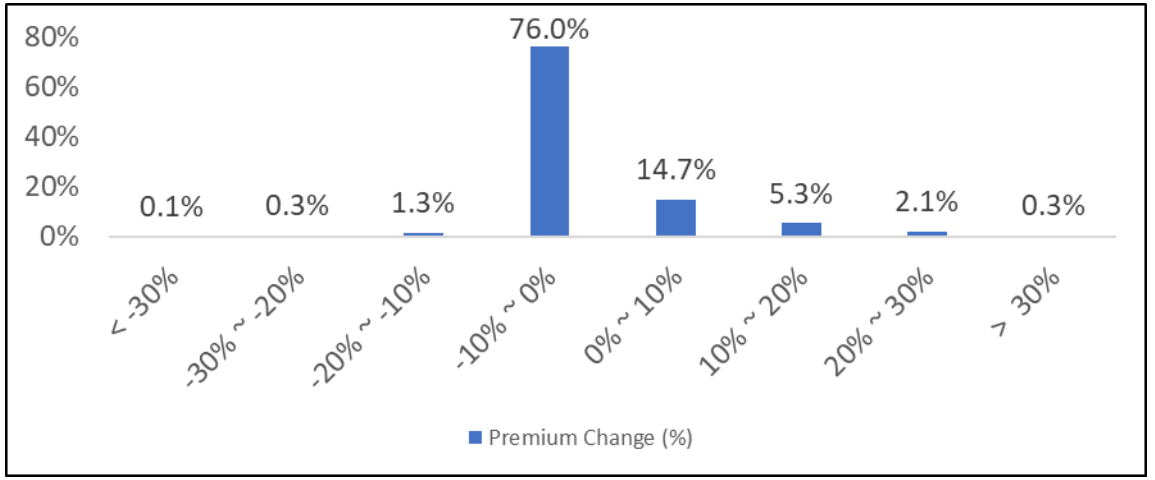
Change in Modified Premium

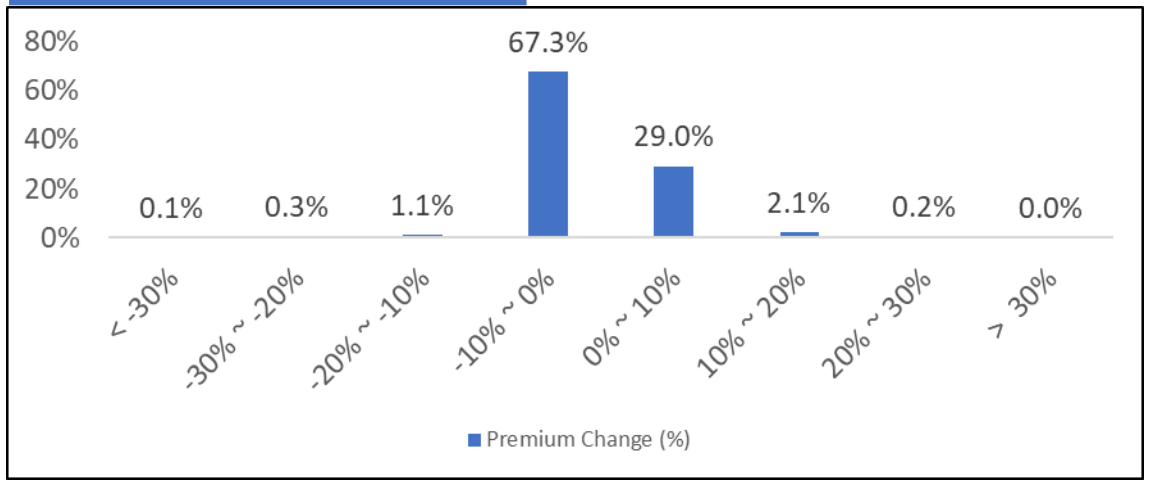
ALL



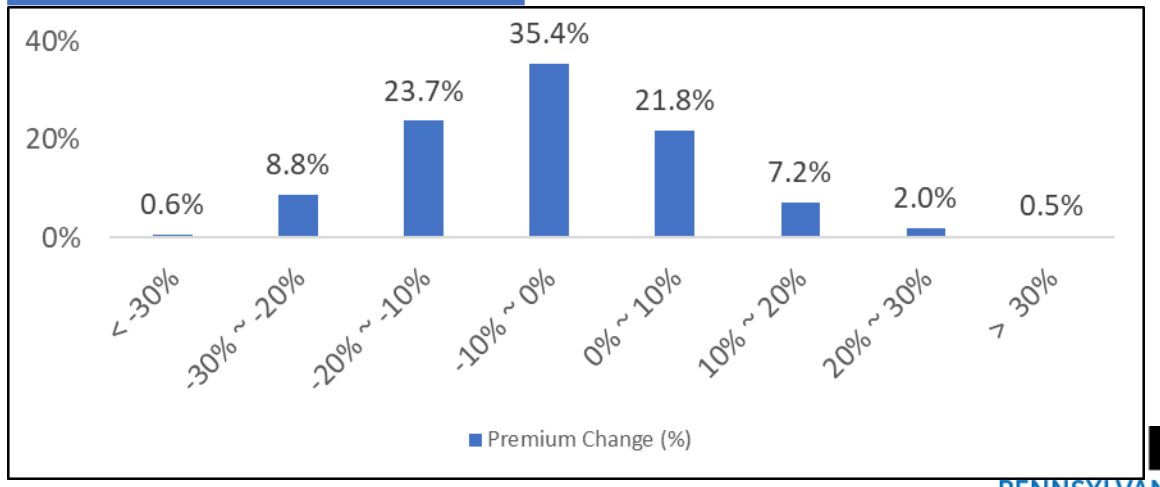
EL < $50,000



$50,000 < EL < $250,000



$250,000 < EL



* Based on PY 2018 data. Premium based on mods after swing limits are applied.

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Current Capping Rules

1. Final Modification Capped to +/- 25% of Prior Modification.

2. If the indicated modification is less than unity (1.000) and the capped modification is greater than unity (1.000), then the final modification shall be set equal to unity (1.000).

Example

Rule	Prior Mod	Indicated Mod	Capped Mod	Final Capped Mod
2	1.563	0.827	1.172	1.000

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Leading Option for Revised Capping Method

- Introduction of a Maximum Mod formula for capping, which also includes a +40% cap to limit larger annual upward movements. This replaces the current +/-25% swing limit approach.

- The current capping rules (+/-25% swing limits and secondary capping) will also be kept for a two-year period to ensure mod stability as we transition to the new plan.

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Example - Capping

Max Mod = 1.10 + 0.0004 (E/G)

Exp Loss	5,000	10,000	25,000	50,000	250,000	500,000	1M
Max Mod (G=10)	1.30	1.50	2.10	3.10	11.10	21.10	41.10

Capping Examples

Scenario	Expected Loss	Prior Mod	Indicated	Capped Mod	Max Mod	Final Capped Mod YR 1	Final Capped Mod YR 2
Transition	$10,000	1.02	1.60	1.28 (+25%)	1.50	1. 28	1.50
After Transition	$10,000	1.02	1.60	1.43 (+40%)	1.50	1. 43	1.50

Min (Max Mod, Capped Mod)

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Policies Capped

Expected Loss	Current Plan (+/-25%)	Updated Plan (+/-25%)	Updated Plan (Max Mod & +40%)
Credit	2%	3%	0%
Debit	8%	11%	8%
Neutral	1.5%	1.6%	0%
Total	**12%**	**16%**	**8%**

The majority of capped risks are smaller risks that are below $25,000.

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Capping Distribution by Expected Loss

	EL < $5,000		$5,000 < EL < $10,000		$10,000 < EL < $25,000		$25,000 < EL < $50,000		$50,000 < EL	
Mod Range	Current	Updated	Current	Updated	Current	Updated	Current	Updated	Current	Updated
0-0.6	0	0	0	0	0	0	0	0	2	488
0.6-0.8	0	0	1	0	0	1,011	3	4,147	3,601	4,759
0.8-0.9	12	7,695	6808	16,762	15,434	14,189	6,363	2,119	3,290	1,948
0.9-1.0	9,259	499	13,558	1452	2,232	1534	1,178	789	2,117	1,790
1.0-1.1	1	201	229	557	845	748	610	539	1,708	1,588
1.1-1.2	0	114	155	311	545	496	422	862	1,315	1,079
1.2-1.5	0	155	245	540	975	2049	1,363	1323	1,677	1,803
1.5-2.0	1	127	147	1267	1287	1325	433	563	610	771
2.0-3.0	0	417	354	559	349	314	72	101	90	176
>3.0	0	65	34	83	40	41	6	7	6	14

NCCI Max Mod = 1.10 + 0.0004(E/G)

G	10	10	10	10	10	10	10
E (Exp Loss)	0	5,000	10,000	25,000	50,000	250,000	500,000
Max Mod	1.10	1.30	1.50	2.10	3.10	11.10	21.10
Min Mod	0.85	0.85	0.84	0.79	0.76	0.59	0.50

* Based on PY 2018 data

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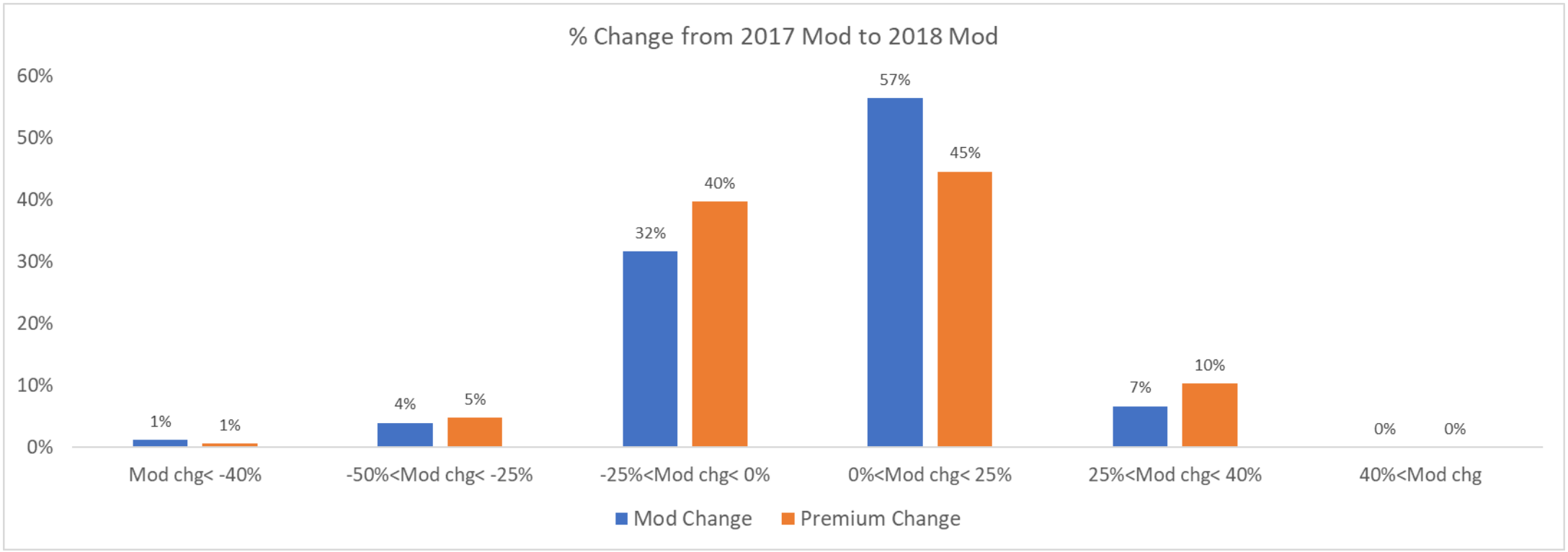
Mod and Premium Change



- The percentage change is calculated from the 2017 capped mod to the 2018 indicated mod, based on the new plan's mod calculation method.

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Capping and Eligibility Summary

Capping	Necessary to maintain a form of capping, particularly for smaller risks, to promote mod stability.
	Most states use a Maximum Mod approach to limit the upside volatility primarily on smaller risks.
	The Maximum Mod helps prevent the mod from becoming excessively high due to one or more large losses that may not accurately reflect overall loss experience.
	The Maximum Mod approach primarily benefits small risks while swing limits provides stability for all risks.
Eligibility	Analyzed to address the transition between the Merit Plan and ERP plan for smaller risks.
	Results show that the use of a Maximum Mod formula and potentially a lower eligibility amount improve the transition between the two plans.
	Lowering the eligibility to $5,000 results 11% more risks being experience rated.

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Recommendations

	Current	Updated
Plan	Single Split Point	Variable Split Point
Eligibility	$10,000	$5,000
Credibility	0.283 - 0.938	0.690 - 0.974
Expected Loss Range	10,706 - 5,806,852	5,000 - 4,338,871
Split Points	Single (1): $42,500	Variable (88): $10,000 – $300,000
Med-Only Claims	100%	100%
Capping %	+-25%	Max Mod and 40% swing limit (2-year Transition)
Secondary Capping	Capping Rule #4	Eliminate (After Transition Period)

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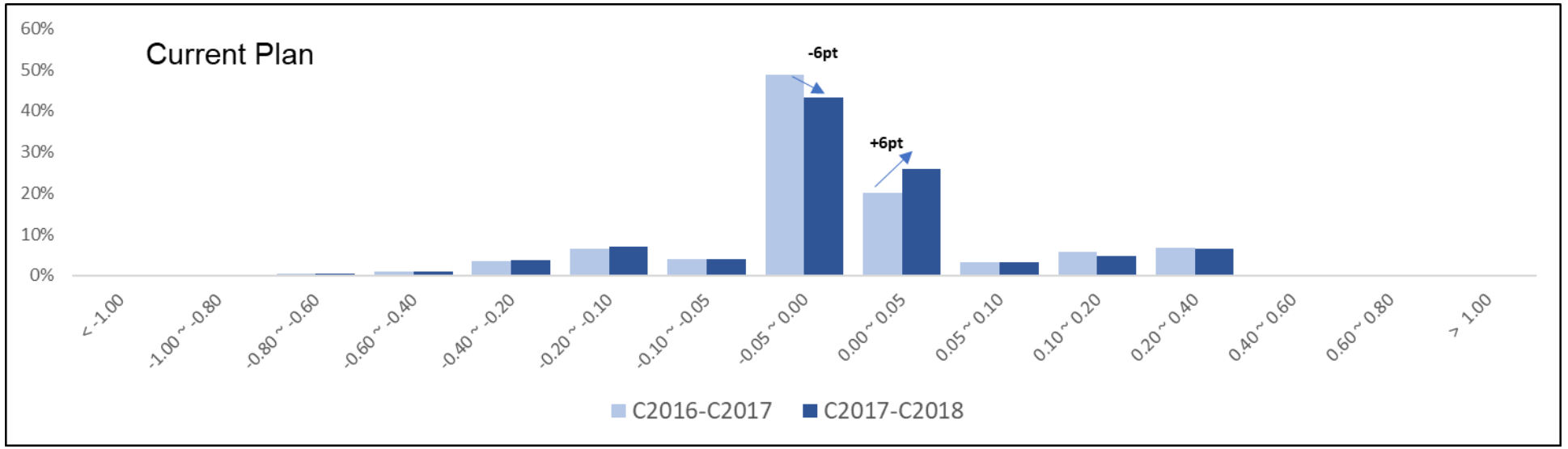
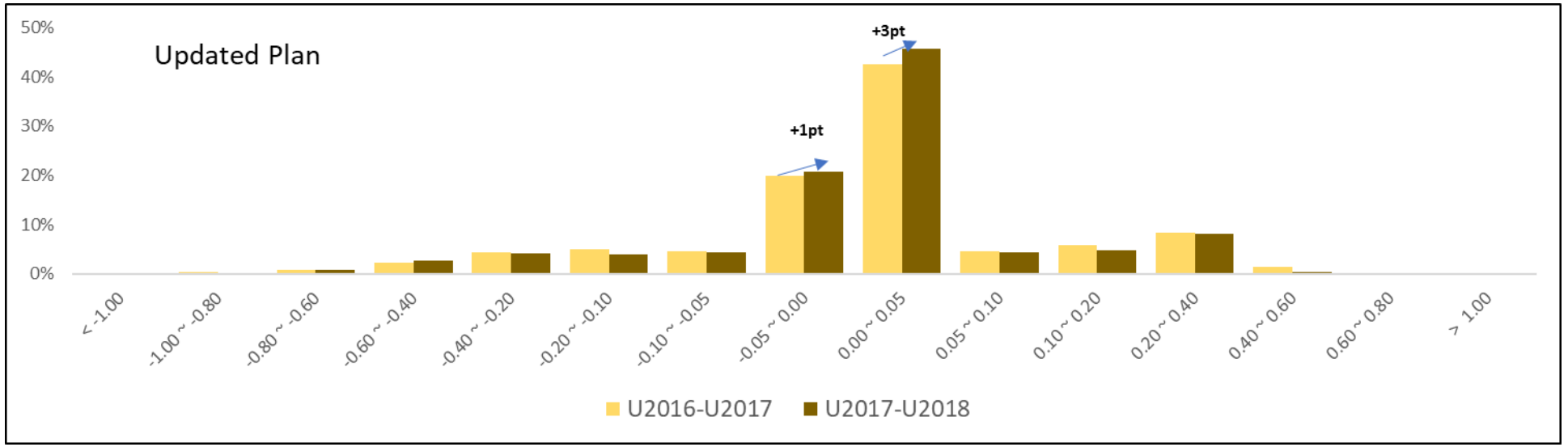
Mod Point Change (Max Mod and +40% Swing Limit)





* C: Current, U: Updated

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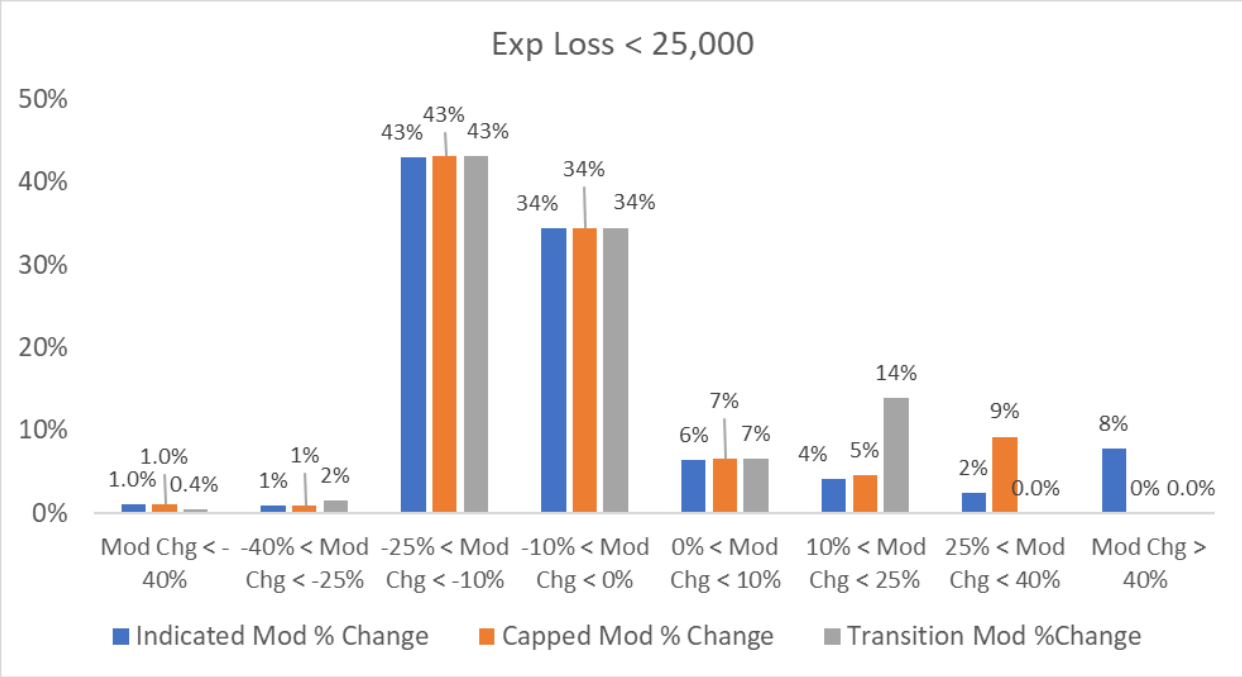
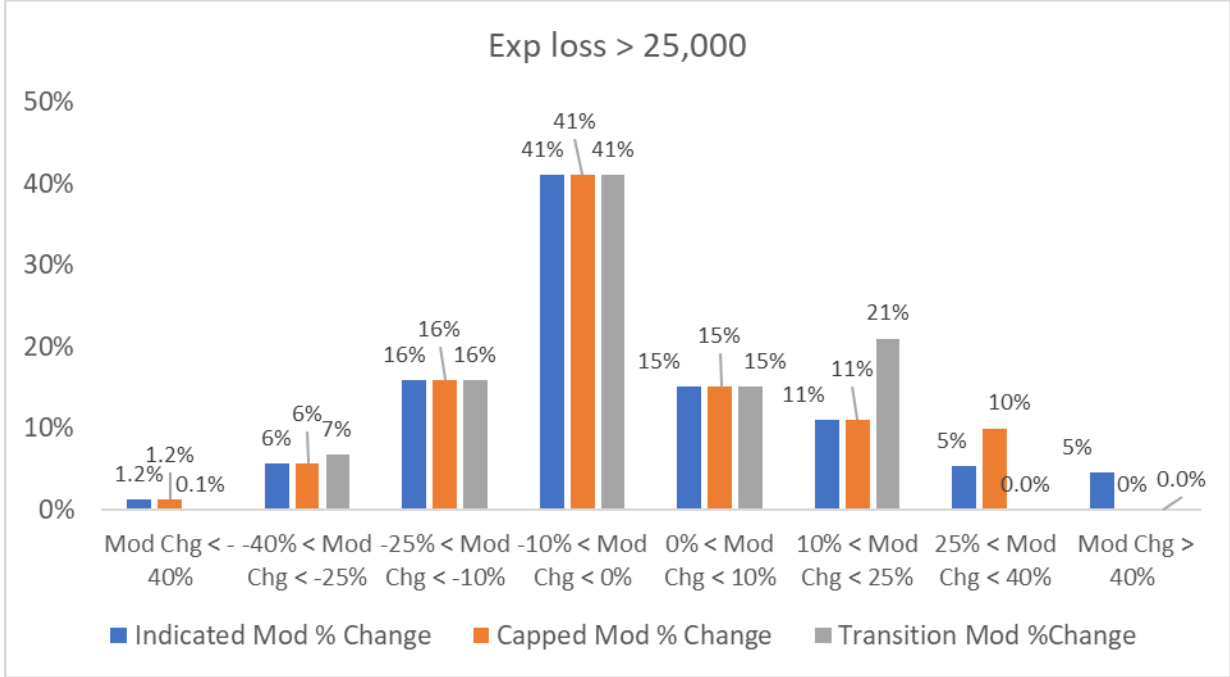
Policies Capped (Max Mod and +40% Swing Limit)





Note: "Capped Mod" is based on using Max Mod and +40% swing limit capping and "Transition Mod" uses both Max Mod and +/-25% swing limit capping used during a transition period.

- Policy Year 2018

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